The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 1740.—Vol. XXXVIII. LONDON, SATURDAY, DECEMBER 26, 1868. {STAMPED .. SIXPENCE, UNSTAMPED..FIVEPENCE

MR. JAMES CROFTS, STOCK AND SHAREBROKER,
No. 1, FINCH LANE, CORNHILL.
(Established 1842.)

Mr. CROFTS transacts business in the way of PURCHASE or SALE of every description of stocks, but particularly BRITISH MINES, at net prices. All orders meet with the utmost punctuality, and advice given as to the nature and eligibility of INVESTMENTS when required.

GREAT WESTERN MINING COMPANY (tin), in 6000 shares, at £2 per share.—Mr. CROFTS reccommends an immediate application to him for shares in this company, as in the course of next week they are likely to all be distributed. When one of the mines which now constitute this company was given up the agents stated that if tin would rise £15 per ton the mine could be worked at a good profit. Since this time tin has risen £20 per ton, including a rise of £3 this week.

Mr. CROFTS has shares for sale in a TIN MINE, now being introduced showing a great percentage of profit.

MR. JOHN BUMPUS, 44, THREADNEEDLE STREET, has FOR SALE the following shares, free of commission :—

85 Anglo-Brazil., 7s. 3d.	10 East Lovell, £9⅜.	158t. John del Rey, £15¼
25 Australian United (Gold), 12s. 6d.	75 Frontino, 8s. 6d.	25 Sth. Darren, 14s. 3d.
20 Brynpostig, £2⅛.	20 Gawton, 29s.	10 W. Rose Down, £11½
50 Carn Camborne, 11s.	5 Gt. Wh. Vor, £11⅝.	75 West Wh Kitty, 7s 6d
15 Clifford, £3¼.	20 Hingston Down, 6s.	100 Wheal Ida (£1 6s. 6d. paid), 2s.
20 Chiverton, £5¾.	10 Linares, £2 18s. 9d.	
25 Chontales, £2 8s 9d	15 Marke Valley, £8 18 9	2 Wheal Seton, £63¼.
20 Don Pedro, £3⅛.	30 New Wh. Lovell, 36s 5d	15 Wheal Uny, £4⅛.
25 Drake Walls, 17s.	40 No. Treskerby, 13s. 9d	30 Wh. Grenville, 33s. 9d
30 East Grenville, £3¼.	50 Prince of Wales, 27s.	40 W. Princeof Wales, 7s.
15 East Caradon, £6 16 3	70 Princessof Wales, 3s 9d	3 W. Chiverton, £6⅝.
20 East Carn Brea, 11s.	50 Redmoor, 5s.	20 Yudanamutana, £2⅛
	50 Royalton, 26s. 9d.	

MR. WILLIAM WARD,
STOCK AND SHAREDEALER,
No. 29, THREADNEEDLE STREET, LONDON, E.C.

MESSRS. WILSON, WARD, AND CO.,
STOCK AND SHAREDEALERS,
16, UNION COURT, OLD BROAD STREET, LONDON, E.C.

MR. THOMAS SPARGO, STOCK AND SHAREDEALER,
224 & 225, GRESHAM HOUSE, OLD BROAD STREET, LONDON, E.C.

JOHN RISLEY, (SWORN) STOCK AND
SHAREBROKER, 48, THREADNEEDLE STREET, LONDON, E.C.
Bankers: London and Westminster, Lothbury.

MR. JAMES HUME, STOCK AND SHAREDEALER,
74, OLD BROAD STREET, LONDON, E.C.
Orders in the following shares are requested :—

Prince of Wales, 30s.	Wheal Uny, £4.	Drake Walls, 18s. 6d.
East Caradon, £7⅜.	East Grenville, £3¼.	North Treskerby.
South Condurrow, 20s.	Grenville, 32s.	Don Pedro, £3⅛ prem.
Chiverton, £6.	Crebor, 10s.	Chontales, £2⅜.

Mr. HUME has special information respecting several mines likely to have a great rise in price.
Buying and selling orders executed on the closest margins.
Bankers: The London Joint-Stock Bank.

MR. J. H. COCK, STOCK AND MINING SHAREDEALER,
74, OLD BROAD STREET, LONDON, E.C.
Fifteen years' experience in Cornwall and London.
BUYER or SELLER of South Condurrow, North Treskerby, Margaret, Rosewall Hill, Chiverton, and every other description of mining shares, at close market prices.

MR. E. J. BARTLETT, STOCK AND SHAREDEALER,
No. 30, GREAT ST. HELEN'S, LONDON, E.C., has SPECIAL BUSINESS in West Godolphin, Summer Hill, North Pool, New Lovell, South Condurrow, Bryn Gwiog, Mary Ann, Wheal Agar, Great Laxey, Great Vor, and South Merilyn.
For immediate purchase, South Merilyn shares are recommended.

MR. JOHN MOSS, STOCK AND SHAREDEALER,
76, OLD BROAD STREET, LONDON, E.C.
Has BUSINESS as BUYER or SELLER in all British and Foreign Mines.
SPECIAL BUSINESS in Frontino, and Prince of Wales.
Bankers: City Bank, Finch-lane, E.C.

Established Fifteen Years.
MESSRS. WARD AND JACKMAN,
STOCK AND SHAREDEALERS,
No. 1, CUSHION COURT, OLD BROAD STREET, CITY, E.C.
Closing prices, Thursday Evening, Dec. 24.

Chiverton Valley	£ 3⅛	to £ 3⅜	Prince of Wales	25s	to 27s
Carn Brea	21	„ 23	Providence	£ 32½	„ £ 35
Chontales	2¼	„ 2½	Rossa Grande (prem.)..	½	„ ⅝
Chiverton	5⅝	„ 5¾	South Condurrow	15s	„ 17s
Cook's Kitchen	13	„ 13½	St. John del Rey	14½	„ 15½
Devon Great Consols..	320	„ 340	St. Ives Consols	9	„ 11
Don Pedro (prem.)	3⅛	„ 3⅜	Tincroft	16½	„ 17½
Drake Walls	18s	„ 20s	West Chiverton	59½	„ 60½
East Grenville	3¼	„ 3½	West Caradon	2¾	„ 3¼
East Lovell	9	„ 9½	West Wh. Frances....	38½	„ 40½
Frank Mills	3½	„ 3⅝	West Wheal Seton	185	„ 190
Great Laxey.....	19½	„ 20½	Wheal Basset	62½	„ 67¾
Great North Laxey ..	⅜	„ ½	Wheal Grenville.....	32s	„ 34s
Great Retallack	2¼	„ 2⅜	Wh. Kitty (St. Agnes)	3¾	„ 4¼
Great Wheal Vor	11	„ 11½	Wheal Margaret.....	4	„ 5
Herodsfoot	43	„ 45	Wheal Mary Ann	20	„ 21
Marke Valley	9	„ 9¼	Wheal Seton	62½	„ 67½
North Treskerby.....	11s	„ 13s	Wheal Uny	3⅞	„ 4½

Messrs. WARD and JACKMAN are DEALERS in all the above-mentioned mines.
Messrs. WARD and JACKMAN have daily information from the principal seats of mining, which is at the service of those who may honour them with their confidence.
Dec. 24. Bankers: London and Westminster, Lothbury.
"A Happy and Prosperous New Year to One and All."

MR. C. A. POWELL, STOCK AND SHAREDEALER,
No. 1, PINNER'S COURT, OLD BROAD STREET, LONDON, E.C.,
BUYER or SELLER of shares in the leading Dividend and Progressive Mines.
References exchanged.
Price List forwarded on application.
Bankers: City Bank, Finch-lane, London, E.C.
*** SPECIAL BUSINESS in Frontino, Don Pedro, Chontales, Del Rey, Caldbeck, Prince of Wales, and North Treskerby.

MR. WILLIAM MARLBOROUGH, 1, GREAT ST. HELEN'S,
BISHOPSGATE STREET, LONDON, E.C. (Established 14 years), has FOR SALE the FOLLOWING SHARES, at net prices :—

3 Cwm Erfin, £18.	20 Gt. No. Laxey, 8s. 9d.	5 Tincroft, £17.
5 Chiverton Val., £3¼.	30 Gt. Retallack, £2½.	5 Trumpet Con., £16⅛.
2 Carn Brea, £21 18s 9d	3 Great Vor, £11 6s 3d	1 West Chiv., £59 18s
20 Chontales, £2 7s. 3d.	1 Herodsfoot, £44½.	2 West Frances. £39½.
15 Chiverton, £5⅝.	5 Marke Valley, £9 3 9	1 West Seton, £188¼.
10 Chiv. Moor, £5 13s 3d	25 No. Treskerby, 12s 3d	2 Wheal Basset, £65.
2 Cook's Kitch., £13 4 6	40 Prince of Wales, 25s 6	50 West Godolphin, 20s.
1 Devon Gt. Con., £329	1 Providence, £34½.	50 Wh. Grenville, 32s 9d
30 Don Pedro, £3 3 pm.	50 Rossa Grande (£½ prem.)	10 Kitty, St. Agnes, £4 1
40 Drake Walls, 18s. 6d.	50 South Condurrow, 16s	5 Wh. Margaret, £4¾.
50 E. Grenville, £3 6s 3	5 St. John del Rey, £14⅞.	3 Wh. Mary Ann, £20⅝
5 East Lovell, £9 7s. 6d	5 St. Ives Con., £9 18 9	1 Wheal Seton, £64 15s
10 Frank Mills, £3 4s 6d		10 Wheal Uny, £4.
5 Great Laxey, £19 18 9		

MR. GEORGE BUDGE, STOCK AND SHAREDEALER,
No. 4, ROYAL EXCHANGE BUILDINGS, LONDON, E.C. (Established 20 years), is a SELLER at net prices of :—40 Cwm Erfin ; 30 Prince of Wales, 27s. 6d. ; 100 Great South Chiverton ; 25 New East Wheal Lovell, 8s. 6d. ; 30 North Downs, 13s. ; 2 Devon Great Consols, £331 ; 25 Chiverton Valley, £3¼ ; 2 Wheal Seton, £69⅛ ; 35 Wheal Grenville ; 150 Glan Alun, 13s. ; 100 Tamar Valley ; 45 Colquite and Callington, £2 2s. ; 90 Lovell Consols ; 20 Brynpostig, 35s. ; 50 West Tremayne, 10s. ; 100 North Jane, 7s. 6d. ; 20 East Chiverton ; 80 Central Snailbeach ; 30 North Treskerby, 11s. ; 100 Redmoor, 4s. 3d. ; 20 Rose and Chiverton ; 70 West Wheal Kitty, 7s. ; 25 North Levant ; 10 Wheal Kitty (St. Agnes) £3 18s. 9d. ; 70 East Reeth.
SPECIAL BUSINESS in Cwm Erfin, Royalton, Great South Chiverton, and North Jane.

CORNISH AND FOREIGN MINES—
TO SHAREHOLDERS AND OTHERS.
PETER WATSON'S "WEEKLY MINING CIRCULAR AND SHARE LIST—SYNOPSIS OF CORNISH AND DEVON MINES," of Thursday, Dec. 24, No. 512, Vol. X., price 6d. each copy, forwarded on application, contains information on the following mines :—

Chiverton.	Wheal Seton.	Anglo-Brazilian.
Great Vor.	West Caradon.	Rossa Grande.
Wheal Mary Ann.	Don Pedro.	

With Special Notice on the Great Western Mines, Leading Articles on the Mining Share Market, the Tin Trade, Tin Standard, Dividends on Stocks and Shares, &c., &c.

INVESTMENT OR SPECULATION.—A SELECTED LIST OF RAILWAYS, BANKS, MINES, COLONIAL SECURITIES, FOREIGN GOVERNMENT BONDS, &c., forwarded to *bona fide* investors on application, in addition to the high rate of interest many of the above are paying, there is now every probability of a great rise in market value.
PETER WATSON, STOCK AND SHAREDEALER,
79, OLD BROAD STREET, LONDON
(three doors only from Hercules-passage, entrance to the Stock Exchange).
Twenty-four years' experience.
(Two in Cornwall and Twenty-two in London.)
Bankers: The Alliance Bank, and the Union Bank of London.
References given and required (when necessary) in all the principal towns of the United Kingdom.

THE LONDON DAILY RECORD—STOCK AND SHARE LIST—STOCK EXCHANGE SECURITIES. Published every evening at 5 o'clock. It contains the latest prices of railways, banks, mines, foreign stocks and bonds, financial, insurance, and miscellaneous shares, remarks on the daily rise and fall in prices, with advice as to purchase and sales. Annual subscription, £1 1s. ; by post, £2 5s. ; monthly subscription—by post, 4s. ; single copy, 1d. ; by post, 2d.
PETER WATSON, Stock and Sharedealer, 79, Old Broad-street, London.

MR. EDWARD COOKE,
STOCK AND MINING SHAREDEALER, 76, OLD BROAD STREET (and Mining Exchange), LONDON, E.C., has BUSINESS in the following Mines at current market prices :—

West Chiverton.	South Darren.	Chiverton.
East Trumpet Consols.	Drake Walls.	South Great Work.
Prince of Wales.	South Condurrow.	East Caradon.
East Lovell.	Trumpet Consols.	West Great Work.
Frank Mills.	New Wheal Lovell.	West Drake Walls.
Chiverton Valley.	Great Wheal Vor.	Great Laxey.

References given.
Price-list sent free on application.
Bankers: Alliance Bank.

MR. W. H. CUELL,
No. 42, CORNHILL, LONDON, E.C.
WANTED TO BUY, a few Anglo-Argentine shares. Sellers state lowest price, &c.

WALTER TREGELLAS, 122, BISHOPSGATE STREET WITHIN, LONDON, E.C., DEALS in all STOCKS AND SHARES, either for cash or the fortnightly settlement.
SPECIAL BUSINESS in the following Gold Mines :—

Don Pedro.	General Brazilian.	Frontino and Bolivia.
Taquaril.	Rossa Grande.	Chontales.
Port Phillip.	Anglo-Brazilian.	

Bankers: The Alliance Bank.

MATTHEW GREENE, STOCK AND SHAREDEALER,
1, ST. MICHAEL'S HOUSE, CORNHILL, LONDON, E.C.

BARTLETT AND CHAPMAN, STOCK AND SHAREDEALERS, 2, BUCKLERSBURY, LONDON, E.C.
SPECIAL BUSINESS in the following shares :—

Don Pedro.	Great Vor.	North Jane.
Great South Chiverton.	East Chiverton.	West Chiverton.
Great Laxey.	Nangiles.	Prince of Wales.
Lovell Consols.	Tamar Valley.	Wheal Mary Ann.
		Trelawny.

And we are always in a position to deal in any other Stock at close market prices.
SPECIALLY RECOMMENDED for immediate purchase—Great South Chiverton, North Jane, West Chiverton, and Lovell Consols.

The Monthly "INVESTMENT CIRCULAR" (post free on application), contains reliable and important information as to the value and prospects of many dividend and progressive mines. It should be consulted before investing.
Bankers: London and Westminster.

MR. T. ROSEWARNE, 81, OLD BROAD STREET, LONDON, E.C.
T. R. has BUSINESS in the following mines, at close market prices :—

Bedford United.	Devon Consols.	South Caradon.
Chiverton.	East Grenville.	Tincroft.
Chiverton Moor.	East Caradon.	West Chiverton.
Chontales.	East Basset.	West Seton.
Carn Brea.	Great Wheal Vor.	Wheal Grenville.
Cook's Kitchen.	Marke Valley.	Wheal Seton.
Drake Walls.	North Roskear.	Wheal Uny.

T. R. is in a position to recommend several progressive mines that are safe for a great rise during the coming year. Having had these mines inspected by competent agents, and having also inspected them myself, and from my practical knowledge of mining in all its brauches, I have great confidence in recommending the mines I have selected for an advance in price. Those who have acted upon my advice during the last twelve months have no reason to complain ; and I never saw a better opportunity offered for making money in mining than the present.
An OFFER WANTED for 70 West Prince of Wales, 160 Princess of Wales, 30 Gawton, 350 Bedford Consols, 110 West Drake Walls, 90 Frontino and Bolivia, 13 Great North Downs, 300 Great South Chiverton, 40 North Treskerby 155 East Carn Brea, 170 Tamar Valley, 500 South Grenville, 7 Wheal Buller, 25 Wheal Agar, 220 Crebor, and 130 North Downs.
Parties desirous of purchasing the whole or any part can be dealt with on liberal terms.
Money advanced to any extent on good mining shares.
Office hours Ten to Four. Bankers: Bank of England.

MR. THOMAS THOMPSON, MINING OFFICES,
12, OLD JEWRY CHAMBERS, LONDON, E.C.
ROYALTON.—The steady increase in the price of tin is causing a great demand for shares in legitimate tin mines, and which, there can be little doubt, will become generally valuable. Investors, however, should be careful how they place money in deep and expensive mines, which can only pay profits with tin at high prices. They should rather seek an investment in those mines which, with extensive reserves, can pay profits with tin at its lowest price. Among the best of this latter class I place Royalton, and recommend the purchase of the shares wherever they may be met with. At their present price they are intrinsically very cheap indeed.

THE MINING INVESTORS' ASSOCIATION.
For the PURPOSE of COLLECTING and DISSEMINATING TRUTHFUL INFORMATION on all MATTERS RELATING to the WORKING as well as the FINANCIAL MANAGEMENT of MINES.
To PURCHASE and SELL MINING STOCK of every description.
To MAKE ADVANCES, at a moderate rate of interest for short periods, upon MINING STOCKS having a market value.
The services of some of the most truthful and experienced Inspecting Agents have been specially retained for this Association.
References to bankers and others given.
Address,—THE MANAGERS, at the Office of the Association, 26, Nicholas lane, Lombard-street, E.C.

INVESTMENT, LOAN, AND BANK AGENCY.
Established 1839.
PUBLIC SECURITIES of every description Bought and Sold upon advantageous terms. Facilities for payment, and every reliable information afforded to Investors.
LOANS granted, for one year or any shorter period, on Stocks and Shares having a market value.
Five per cent. interest allowed upon DEPOSITS of all amounts.
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3, GREAT ST. HELEN'S, LONDON, E.C.

Third Edition, price One Shilling ; post-free, fourteen stamps,
MINING FIELDS OF THE WEST :
A PRACTICAL EXPOSITION OF THE
PRINCIPAL MINES and MINING DISTRICTS of CORNWALL and DEVON.
Published by CHARLES THOMAS,
At No. 3, Great St. Helen's, London, E.C.

MR. JOHN GIBBS (late LANE and GIBBS), 2, ROYAL EXCHANGE, LONDON, E.C.
MARKE VALLEY, EAST CARADON, WEST ROSE DOWN, and CARN CAMBORN : MINES.—Although difficult to effect transactions in these mines at times on the Mining Market the advertiser is always in a position amongst his correspondents to buy and sell at close prices, and does not hesitate to recommend a purchase in each and all of the above for a great advance in price and large dividends.
GREAT LAXEY and SOUTH DARREN. SPECIAL BUSINESS in these mines.
Bankers : London and County Bank.

Established Twelve Years.—Twenty-four Years' Experience.
MR. F. W. MANSELL, 44, THREADNEEDLE STREET, LONDON, E.C.
Mr. F. W. MANSELL is always in a position to BUY or SELL every description of Stocks and Shares, for cash or account, at close market prices.
The following are specially recommended for immediate purchase :—East Caradon, Mary Ann, South Condurrow, Tamar Valley, Wheal Seton, Great South Chiverton, and Drake Walls. Every particular may be had on application.
Bankers : London Joint Stock Bank.

MR. WILLIAM SEWARD, STOCK AND MINING SHARE BROKER, 19, THROGMORTON STREET, LONDON, E.C.
Every description of shares BOUGHT and SOLD at the best market prices.

MR G. D. SANDY, STOCK AND SHAREDEALER,
No. 48, THREADNEEDLE STREET, LONDON, E.C.
Mr. G. D. SANDY has a limited number of shares for sale in the following mines, and can furnish full particulars concerning the same :—Tamar Valley, East Caradon, South Condurrow, New Clifford, Lovell Consols, Great South Chiverton, and Prince of Wales.

MR. EMANUEL BEAZLEY,
STOCK AND SHAREDEALER,
3, CROWN COURT, THREADNEEDLE STREET, LONDON, E.C.

MR. HENRY MANSELL,
44, THREADNEEDLE STREET, LONDON, E.C.
PRINCE OF WALES MINE.—These shares are now at 24s. 6d., 25s. 6d, and part1 who acted on my advice can now see the benefit derived from it.
GREAT WESTERN MINING COMPANY.—Mr. H. M. should be consulted before acting in these shares. Thirteen Years' Experience.
Bankers : London Joint-Stock Bank.
References exchanged.

WEST CORNWALL GRANITE COMPANY (LIMITED),
In 1000 shares, of £10 per share (£8 10s. paid).
MR. HENRY MANSELL, 44, THREADNEEDLE STREET, LONDON, E.C., has a few SHARES in these PROFITABLE QUARRIES to OFFER at £5 per share (£8 10s. paid), at present paying from 10 to 15 per cent. The quarries are situated in West Cornwall, with shipping ports at Hayle and Porthleven, and are supplying a contract for the New Government Docks at Chatham and other works, and large quantities of the stone have been supplied for the Thames Embankment. The quality of the granite is equal to any in Cornwall, and upwards of 250 tons are shipped monthly, and the quantity can be considerably increased.
Samples of the granite, and all particulars, can be had at the above address.
Mr. H. M. recommends these shares as a sound investment.

THE OLD YEAR AND THE NEW.
Now in the press,
MR. J. B. REYNOLDS' "CIRCULAR," which contains—Particulars of Markets, Past and Future—the Position of the Metal Markets, Lead and Tin, as compared with Copper Mines—and other matters of great importance to the Investor.
To be had on application to Mr. J. B. REYNOLDS, Ethelburga House, Bishopsgate-street Within, London, E.C.

INTENDING INVESTORS.—The "FINANCIAL GAZETTE," published by Mr. Y. CHRISTIAN, should be consulted with a VIEW to the SAFE EMPLOYMENT of CAPITAL. It contains Original Articles, a Review of the Money Markets, and a selection of investments paying 10 to 17 per cent., and such information as is necessary to guide intending investors.
6, Bond-court, Mansion House, London, E.C.
Bankers : Bank of England.

INVESTORS IN MINING COMPANIES.—Mr. CHRISTIAN recommends the immediate PURCHASE of NORTH LEVANT SHARES, whether bought to hold as an investment or to sell again. It is a splendid property, and dividends are close at hand. Although Mr. CHRISTIAN is the only person publicly recommending the purchase of shares in this sett, he does so with the greatest of confidence, feeling assured that those who buy now will do well.

CORNISH TIN MINES.—Before investing in ROYALTON, get full information about EAST ROYALTON, from
T. A. MUNDY AND CO., 38, BISHOPSGATE STREET WITHIN ; or
W. HANNAM AND CO., 449, STRAND.

MR. J. S. MERRY,
ASSAYER AND ANALYTICAL CHEMIST,
SWANSEA.

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MESSRS. T. A. MUNDY AND CO. have FOR SALE a QUANTITY of MISCELLANEOUS SHARES, many of them very great bargains, and unattainable through any other channel. Dividends may be safely secured varying from 8 to 20 per cent.
Special attention given to *bona fide* English and Foreign Mining Shares.
MISCELLANEOUS SHARE EXCHANGE,
38, BISHOPSGATE STREET, WITHIN, LONDON, E.C.

INVESTMENTS.
MESSRS. FAIRBAIRN AND CO., MINING ENGINEERS, STOCK AND SHARE DEALERS, No. 160, GRESHAM HOUSE, OLD BROAD STREET, LONDON, TRANSACT BUSINESS, for cash or account, in Stock Exchange or other Securities.
Our "Guide" for the present month will shortly be ready, and can be had free upon application. It contain particulars of the best paying and safest progressive undertakings, Stocks, Debentures, Bonds, and Shares.
A daily Price List, showing the latest quotations, with special remarks upon Mines, Banks, Railways, Gas, and Water Companies, together with English and Foreign Stocks and other Securities.
Published every evening at Six o'clock, and will be forwarded on receipt of stamped envelope.

CHONTALES GOLD COMPANY.—FULL PARTICULARS of the DIFFERENT CLASSES of SHARES can be obtained on application to Mr. J. H. MURCHISON, No. 8, Austinfriars, E.C.

MR. EDWARD BREWIS, STOCK AND SHAREDEALER,
PALMERSTON BUILDINGS, OLD BROAD STREET, LONDON, E.C.
has business as BUYER or SELLER in the undermentioned mines at very favourable prices :—Colquite and Callington, Rossa Grande, Maudlin, Cornwall Hematite, Royalton, Sao Vicente, West Godolphin, Brynpostig, Don Pedro, East Lovell, Great Vor, Lucy Phillips, East Chiverton, Frontino and Bolivia, West St. Ives, Chiverton Valley, East Carn Brea, Summer Hill, Pestarena, Anglo-Brazilian, North Jane, Chiverton, South Condurrow, North Crofty, West Kitty, Lovell Consols, Prince of Wales, Glan Alun, East Bottle Hill, GREAT RHOSESMOR, EAST REETH, North Treskerby, Royalton, Tamar Valley, Great South Chiverton, and East Grenville.
WANTED TO BUY—50 East Bottle Hill shares, or any part.

The Royal School of Mines, Jermyn Street.

MR. WARINGTON SMYTH'S LECTURES.

[FROM NOTES BY OUR OWN REPORTER.]

LECTURE XII.—MR. SMYTH commenced by saying—In our yesterday's lecture I placed before you the conditions met with at the outset when the miner first examines a mineral district, with a view to discover repositories of minerals, taking it for granted that indications of them will be shown with more or less clearness at the surface. In the majority of cases, however, the explorer will have to go through considerable processes of search before he can meet with the repository itself which may have been indicated by "shode" stones. We have seen that in the following up shode stones to their source, and working out the problems they present, is an art requiring thought and experience, so that it was considered by old authors an actual science, worthy of persevering and patient study. In the North of England a good deal is done in this way, even up to the present time, systematically; but, on the whole, taking the United Kingdom through, the search for and by means of shode stones generally arises from accidental circumstances. In our colonies, on the other hand, and in new countries, it is an art which has been revived of late years to a considerable extent, and "prospectors" are known in such regions to be commonly persons of unusual intelligence and perseverance; as, indeed, they must be if they would meet with success. We will now proceed with the consideration of other circumstances, preliminary to actual mining, which must not be neglected if we would approach the work with that degree of caution which always ought to be exercised. I have mentioned the problems which arise when shode stones are met with otherwise than in the bed of a stream, the curious circumstances under which they are sometimes found on hill sides, and how frequently it is necessary to cut trenches and sink shafts at some distance from them in order to seek for the lode. When it has actually been found, it is a good thing to lay it bare in several places, to trace it for some distance, and to examine the substances of which it is composed, although they will not always give true samples, but only indications, of the metallic ores beneath. If it should be of the nature of a kindly spar we may form a better opinion of it than we should if of a harder texture. If there should be, again, instead of mere quartz a large amount of *fluor spar* in the vein stone, we should form a favourable conclusion of the lode, because it would be more cheaply worked than if it were composed of quartz, and because the fluor-spar will act as a flux, and give greater facilities in smelting. In some instances the presence of barytes may assist the formation of slags in the furnace; and the sulphates and carbonates of baryta, therefore, may sometimes be considered useful substances, as giving a favourable character to a lode. It is, therefore, obvious that in forming an idea of the value of a mineral repository the character of the non-metallic substance must be taken into account. If in the back or broil of the lode, as it is called, we should find precious metals in small quantities, it is desirable to ascertain the exact proportion in which they exist. This is done with the assistance, in the first instance, of the convenient mechanical assay called "vanning," or "panning," in which a small portion of the material is taken up in a shovel, or a shallow bowl with water, and the refuse gradually separated and shaken out of it, leaving the gold or silver ores, or other valuable substances, of high specific gravity, for closer inspection. If the gossans be thus proved to contain a share of such minerals, and there is a fair prospect of their continuance, care must be taken to get a fair average sample of the whole, and not one taken from any particular spot. In doing this, therefore, the proper mode will be to take a portion from a number of places, break them up, or bruise them, and heap them in a large pile. These should be well mixed, and the pile cut through, dividing it into four quarters. A shovelful should be taken from each quarter, put together in a heap, and the operation repeated. In this way a small quantity will be obtained to be sent to the assayers, which would give a true value of the real quality of the lode. It is likely that in gold and silver deposits there will be small nests or portions of richer vein stone, to say nothing of nuggets, or free gold, which will give a much larger profit than samples of the whole vein would indicate. These will always be looked for anxiously where there are intersections by other veins, but they should not be depended on in making calculations. The ordinary produce of the lode must be looked to for payment of the current expenses, while the richer parts and the nests should be left to swell the profits. It is dangerous, indeed, to trust to these accidental riches, and there are instances enough of companies being got up, and a large capital subscribed, upon the faith of assays which have not been taken from the whole lode, but from certain spots, and which, therefore, have ended only in disappointment and loss.

There is another question which suggests itself with regard to these precious metals when a new mine is opened—whether the deposits will be prolonged in depth or not. It has been observed distinctly in many cases that gold and silver ores which have been present with considerable richness in the gossan have diminished gradually, and been lost in depth. Thus, in the county of Wicklow, where the gossans contained, years ago, auriferous silver, none is now to be found in the mines. Amongst other instances may be mentioned the mines of Schemnitz, in Hungary, which are worked to the depth of 300 fathoms, measured from the outcrop of the northern lodes. The main lodes are ten in number, and in three of them—the Ochsenkopfer gang, the Theres gang, and the Bieber gang—fine, handsome specimens of gold were obtained from the gossan, but in them, and in the largest lode in the series, the Spitalin gang, no free gold was found worth speaking of below a depth of 50 fathoms. From that depth to 150 fathoms they came upon rich ores of silver, such as argentite, or silver-glance, stephenite, &c., which more than made up for the disappearance of gold; as they advanced, however, in depth these diminished, and galena, zinc-blende, and iron pyrites occur in larger quantity, which still yield a certain amount of gold for the stamps. Fortunately, there are many exceptions to this rule, and if we may trust to a generalisation from moderate depths, such as we obtain from the accounts we have from California and Australia, there is in those districts no remarkable diminution of gold at 100 or 120 fms. deep. At the St. John del Rey Mine, in Brazil, the proportion of gold does not seem to deteriorate at even 150 to 160 fms. deep. With regard to silver veins, I have a table of results [exhibited] as to the production of silver at the mines of Przibram, in Bohemia, which have been opened to a very great depth, and have been at work since the year 1783. In 1785 the average lode stuff began to yield about 2 loths to the cwt., each loth being about ½ oz. From that year to 1800, as the mine became deeper the quantity of silver which the ores averaged was 4 or 5 loths to the cwt. of material raised. In 1820 it had increased to 7 loths; in 1850 to 8 loths; in 1860 to 9 loths, which the mines continue to yield, even at the great depth of 360 fms., the distance from the surface they have now reached. If, then, we should have to open a mine in such a district, known facts of this kind will be most encouraging, and if the substance found in the vein near the surface gave 2 or 3 loths to the cwt., a larger proportion may be expected as the mine progresses in depth. In such cases we may safely be led by the experience of men who have previously worked in the district; but if we go into a new country, it is requisite to be more cautious. There are other points to be considered with reference to these richer ores. We may fairly trust to realise the metals contained in the material, if they have to be obtained by elaborate subsequent processes, but if the gold and silver should occur in so rich a form that valuable pieces may readily be secreted, it is doubtful whether you will be able to work to as much advantage as you ought to do. There are districts where all the miners are subjected to the severest scrutiny on leaving the works; and in such places it is rather curious to see men who are not slaves compelled to strip themselves naked, or submit to a strict search, before they leave the mines. Even all these precautions are evaded by a variety of tricks, and it is almost impossible for either a company or individuals to work mines of this description, and take the full profits of what is got out. I do not say that honest men are not to be found, but there is something about nuggets and rich ores of the precious metals so tempting that it is apt to corrupt the people who have to deal with them. It may be felt a demoralising and disagreeable duty for an agent to carry out, but the only way to avoid it is by keeping a close supervision of the work, to employ the inferior men on the poorer portions of the deposit, and devolve the duty of working the richer upon the most confidential persons attached to the mine.

We now come to the subject of preliminary workings—that is, what may be done by means of implements towards reaching the repositories of valuable minerals. Where we have stratified beds to deal with it is only to remove the actual overburden, but we seldom have lodes coming up in that way to the surface. We may not have even in a seam of coal its full excellence up to the surface; it is more generally indicated by "mush" or "smut," being reduced by pressure and moisture to a state which renders it useless for sale, but there is no difficulty about it, as, if we sink a shaft, we are sure to find it at a moderate depth in a more useful condition. In new districts it may be necessary to test it foot by foot, and, as far as experience goes, we know that it is impossible to form a true opinion at the surface of the quality of slates and building stones. If we take the case of slate quarries, though we have the true rock, and it be favourable in appearance there is scarcely a single quarry in existence where success has been attained without spending as much as 40,000*l.* or even 60,000*l.* in the removal of material of the same general character, but not sufficiently good for sale. I could place my finger upon many instances at the present moment in which they are still working on without profit, although when they commenced, years ago, appearances were so promising that it was thought they would be productive at once. I remember visiting one quarry in particular, at which the first dividend had just been declared, after working for twenty-five years at an enormous expense, although it was expected at the outset that they would divide at once. We must be, therefore, prepared to spend a large sum before anything is gained to reward the shareholders for the outlay of their capital. Wherever it is likely the gossan runs to a considerable depth, as in Cornwall, it may be unwise to devote any large amount of money to operations near the surface. It may be better to sink a shaft at once, and drive out levels. Miners generally do not expect any satisfactory results from shallow operations, and they, therefore, go to work more seriously in districts where the gossans are known to descend to unusual depths. We must be prepared then, to put down machinery, and attack the vein, so as to catch it at a point below the surface, either directly or by driving a level, that point being dependent upon changes which may alter the true character of the vein. Independently of all these, there are other considerations which ought to be carefully weighed by the mining engineer before he forms an estimate of the capital required, and the time which must be expended, before the mine can be brought into paying condition. These may be classified in the following manner:—

1.—First of all, from whom, and on what conditions, and for what length of time a mining area is to be obtained—that is to say, whether it would have to be held under a long or a short lease. If it be only for a short time there must be a fair prospect of recouping the capital in that time, as well as of working profit. If it be for a long period the system may be greatly modified. Then the nature of the partnership is very important. The favourite—or, I should rather say, the lately favourite—system of limited liability requires far different conditions than that of the "Cost-book System," so long and so successfully at work in the western counties. With regard to collieries, the machinery to be erected on the surface to work the mine, or, in other mines, to bring the material into a better state for the market—as, for instance, the planing and sawing of slate or slabs—is oftentimes so costly and considerable that a longer period than the usual term of twenty-one years should be obtained, particularly if in sparsely populated districts cottages have to be built for workmen. Thus, in some cases, as at St. Domingo, in Portugal, where remarkable deposits of iron pyrites are found, railroads had to be laid down, a river rendered navigable, schools opened, a church—indeed, a town—built at an enormous expense before the mines could be fully opened, all of which could not be done without, in order to ensure a great success.

2.—We must next consider what power, if any, is at hand—whether we can have water-power, which is cheapest, or, if not water or not enough of it, whether fuel—wood or coal—would have to be obtained at a distance, and what are their respective prices. Speaking generally, so far as this country is concerned, there is in the hilly districts sufficient water, although it may have to be collected in reservoirs, and brought some distance. In Cardiganshire, near Aberystwith, for instance, there are cases where the water thus collected is carried from four to eight miles, and in this way the mines there are worked with great economy. It must also be recollected that the height from above the sea-level as affecting the climate is important. In some instances, great difficulty arises from the continuance of frosts and snow, as in Norway, where the water is all frozen up in October, and no more to be had until the thaws of spring. In such regions the water in the mine does not freeze, but continues to rise, and, the outlets being frozen up, it may drown out the miner. From circumstances of this kind the mines opened on the lodes of the French Alps can only be worked four or five months in the year. Nevertheless, in the Hartz, at Freiberg, in Saxony, and at Schemnitz, in Hungary, the supply of water-power is managed with great success, the water being brought 12 or 14 miles, notwithstanding all the difficulties produced by severe frosts. Again, if the supply is obtained too near the heads of streams it cannot be expected to be steady. There may be more than is wanted to-day, and not enough for to-morrow, so that it is necessary to construct reservoirs. Reasons of this kind may render it better, even if the cost be greater, to use steam-power, as they almost invariably do in the South-West of England. In some countries the climate is so injurious to health that Europeans are compelled to remove to other localities during a part of the year—a circumstance to which when abroad the engineer must attach due weight.

3.—The third point—what means of communication or carriage exist; whether by road, canals, railways, sea-carriage, or horse-carriage. On the Fells, in the North of England, they yet follow the primitive method of carrying the ores upon galloways, and abroad mules are employed with great economy. Carriage, however, of this kind could not compete with carriage on ordinary roads, to say nothing of railways. Miners are better off in this respect than they used to be, and, therefore, deposits of a poorer character can be worked to advantage which formerly could not.

4.—Whether suitable kinds of wood are attainable on the spot for securing the workmen, and keeping open the levels by props. Fir or pine, good larch, and oak are the most useful sorts of timber, and the cost of them and the distance they have to be brought are matters of importance. In some districts in Europe, as in Styria, where large smelting-works are established, and in America, where the woods are near the rivers, timber for mines is floated down the streams very cheaply. In the Cornish mines, where enormous quantities of timber are used, and where it is not to be had in the neighbourhood, they are entirely supplied from the Baltic, at a cost of carriage extremely reasonable.

5.—The wages of skilled and unskilled industry in the neighbourhood of the mine, and the proximity, or otherwise, of the dwellings of the workmen. You will find that in commencing a mine in remote districts this labour question will be one of difficulty, and you will have to build barracks or dwellings of some kind on the spot, or much time and strength will be wasted in going to and fro, and the rate of wages is a matter of equal importance. In some places where the price of labour has risen to a great height, as in California, it is impossible to work any but the richest deposits. In Hungary the contrary is the case, and, therefore, mining there, although often in poor ground, is not unprofitable. Another point of the greatest importance is the skill and intelligence of the workmen. Nothing is easier than to mar a mine by indiscreet directions, and get it into a bad shape, whereas it will cost a great deal of time and money, and nothing is more difficult, to restore it to a good form for working.

6.—So far as aboveground arrangements for a mine are concerned, the first thing to be done is to establish an office, a dwelling for the overlooker and others, carpenters' sheds, a smiths' shop, places to store materials, and various indispensable fixtures of a like character. These things must be done when a commencement is resolved upon; but I do remember a case where large establishments of this kind were set up before they had looked to see if the vein they expected was there, and it so happened that the vein never was found. That may seem an exaggerated case, but there it stands to this day as an example of what foolish things may be done if due thought and caution are not observed. While, however, there are instances of this kind where buildings and machinery unsuited to the requirements of the case may be erected, and much capital thereby thrown away, the mining engineer must be equally careful not to err on the other side. If necessaries such as I have mentioned have to be brought or fetched from a distance they are works that involve loss of time, which means loss of money. When works acquire any magnitude a considerable quantity of accommodation is required, and, therefore, whatever buildings are put up at the commencement should be designed so that they may be enlarged as required. As regards machinery, it must be remembered that while a due regard to economy cannot be too highly praised, niggardliness very rarely effects any real saving. People sometimes for the sake of a smaller present outlay put up (say) a steam-engine, which barely does what is required from it, and then as the work increases it is overstrained, and delays often occur, the result of breakages, so much as to more than outweigh the supposed saving. It is always better to have machinery rather more than less powerful enough for the work required, and then everything is done with ease and economy.

Having carefully attended to these preliminaries, we have next to see how the miners may be best set to work. In the case of coal, ironstone, and many other substances, we may frequently begin at once, by sinking shafts, so as to intersect the bed vertically—a very different process to that of metalliferous mines, where the shaft may be put down on the outcrop, and follow the course of the lode downwards. In other cases, when the surface is hilly, we may with an adit level open the ground, and also allow the water to drain off. [Mr. Smyth illustrated these different points by exhibiting an elaborate series of models.] In opening, however, a mineral vein the conditions to be dealt with are involved in great uncertainty, and that not only as regards the substances to be dealt with, which renders it necessary to examine the composition of the vein foot by foot, but with regard to position. If we had to deal with a hill-side, on which we thought of opening a mine, it would be necessary to find the direction of the dip, which, if it should be with the hill, makes the opening of an adit a matter of the greatest necessity. Something depends on the depth of the gossan, but, even if the district should prove uncertain, there is a good chance of reaching the lode. If, on the other hand, the lode dips into the hill the adit would take so long to reach it that it is doubtful whether it is worth while to drive a gallery of that kind, but an exploratory shaft would be opened, worked by a horse-whim. What more may be done will then depend on the nature of the vein itself, and partly on the ground to be driven through. In the case of a cross vein it will be necessary to judge of the course to be followed, not only in reference to that, but whether or not the lode dipping into the hill, an adit should be driven. Furthermore, it is a question requiring great consideration in opening by means of shafts when one will not suffice. Thus, one may be regarded as the sump-shaft, from which the pumping may be done, while the others, if more than 40 or 50 fms. apart, would not drain into the same sump, and will be too expensive to be in character with any economical mode of working. In some districts it is the fashion to prefer the system of driving long levels, for the purpose of testing the ground, but adventurers, as a rule, do not like pursuing this course too far, since it postpones for a long time the possibility of making returns. It is, however, in all cases very important to become acquainted with the nature of the deposit to be worked, and to test whether it be a true lode or a repository of another form, as that knowledge will greatly simplify as well as guide the shape which the working will take, and it is obvious that before any large amount of machinery is erected, or many serious operations attempted, the mining engineer should be as well acquainted as possible with the general character of the repository of valuable minerals to be attacked.

LECTURE XIII.—The last lecture having been devoted to the subject of general research, and having pointed out how important it is that we should be guided by a knowledge of geological and mineralogical science in those researches; and how, amongst other things, that it is important to endeavour to distinguish between those veins which approximate to a stratified character and those which are true lodes, we will now look at the methods by which we are to gain access to some of these repositories, and by which the miner may be benefitted in one way or another. Before coming to the means used for working the rocks by excavations, we may profitably devote the next three lectures to the subject of boring, or the means of penetrating by instruments to depths in the crust of the earth quite as considerable as those attained by actual shafts, but having the advantage that these bore-holes, as they are termed, can be sunk at a comparatively small expense, in consequence of their being put down without the necessity of having to pump water from the excavation. If we compare the deepest bore-hole in existence, that at Creuzot, we shall find that it reaches a depth scarcely less than that of the deepest known shaft; but there is this great difference between the two—that a shaft cannot be sunk to any considerable depth without the erection of a powerful pumping apparatus, while a bore-hole may be carried on with even greater facility if it be full of water. Bore-holes (French *sondage*, and the borer *sondeur*) may be sunk for a variety of purposes. They may descend only a few yards, or they may go to a depth of 1000 feet—that at Cruzot, which I have mentioned before, being 500 fathoms. They may vary from 2 or 3 inches in diameter, the ordinary size, to 18 inches, but in some remarkable instances 3 or 4 feet, and in a few under particular circumstances 14 or 15 feet in diameter, which are in fact bored shafts. These bore-holes are capable of being put down through rocks, whether of a stratified or an unstratified character, through difficulties not only arising from one rock being harder than another, but from the grain of the rock being in a more compact state, or full of rounded concretions, or pebbles. The objects sought to be gained by these bore-holes may be divided into four different classes, and you will see that the apparatus must vary considerably, whether the one or the other of these objects is in view.

1.—The simplest kinds are those used by architects and engineers to test the character of ground to a small depth, for the purpose of ensuring the foundation of buildings. Thus it is on record how carefully Sir Christopher Wren bored the ground, not only on which St. Paul's Cathedral stands, but that which is adjacent, before he proceeded to pile up a mass of such enormous weight and magnitude as the vast structure which is said to form his best monument. So for a railway cutting it is necessary very frequently to ascertain the hardness and character of the material to be cut through in order to truly estimate the cost of the work.

2.—Bore-holes are often employed, and particularly in mining, for precautionary or exploratory, or other incidental purposes. Thus it is usual in stratified rocks to prove the thickness and position of the deposits, or it may be of seams of coal or of bands of ironstone. It is also extensively employed in seeking for the irregular repositories of ore, which in some districts are known to exist in great numbers. In the mines themselves bore-holes are used for a variety of purposes. For instance, it is sometimes necessary to relieve the upper workings from water by tapping, and thus letting the fluid into those which are lower, and thus to the adit drainage or the pumping-shaft, as the case may be. Again, it frequently comes into play in the supply of air to workings on the rise, and under other circumstances often of vital importance.

It is obvious in dealing with stratified beds that bore-holes at no great distance apart will yield reliable information as to the position, depth, and thickness of the beds we desire to reach; but the greatest care is generally necessary to see that the workmen do not, by carelessness or inadvertence, lose the full use of the work. A mining engineer had better, as far as possible, trust to nothing but his own eyesight. I have seen cases where a seam of coal 6 ft. thick has been bored through, and the men have taken no notice of it—I do not say it was so in this case, but it is possible that sometimes men are bribed not to notice the existence of particular beds, if found—but whatever the cause or motive, the result of such carelessness is the same to the engineer and his employers. It is important, then, to employ the most respectable men that can be had, and have a boremaster on whom reliance can be placed, and also to have someone at hand in those portions of the boring in which, it may be from known facts, important results are looked for. I have already said something respecting the important irregular repositories of ore in the districts of Ulverstone and Whitehaven, where valuable masses of iron are found lying in a variety of strange and unexpected forms, covered up with many feet of sand or clay, and to which, therefore, there is very little clue at the surface as to what exists below. In these districts the owner, or persons who obtain a grant for that purpose, put down a series of bore-holes in search of the valuable mineral. This is a work of great uncertainty, because, although it is known that riches are near, from the eccentric and irregular character of these repositories, it is quite easy to miss them altogether. Some remarkable instances of this kind have occurred. In one case three or four bore-holes were sunk in one field without touching anything, and it was given up as useless: but a long time afterwards new adventurers tried again by putting down a bore-hole in the space intermediate between the other perforations, and came to a mass of rich and valuable mineral. In cases of this kind the deposits are, probably, very nearly vertical, and it is obvious that a sinking on either side may frequently descend to great depths without touching them. Thus it is that, as a rule, searching in this way by bore-holes is less satisfactory, not only amongst the irregular deposits, but for metallic lodes, than in the stratified rocks. Persons often say, with respect to tin and copper, in the West of England and elsewhere—"Why not bore down and see if ore is there," but it is not done, because those who understand the subject know that borings without end might be made without reaching the ore, and even if a lode were reached there would be the chance, and a very probable one too, of going through a part of it which would be perfectly dead. Exploring districts for mineral veins cannot but be entirely futile, whereas in stratified districts boring is useful, and often an almost invaluable aid to the mining engineer.

In the workings themselves bore-holes are occasionally, and might be much more frequently, employed. In some districts the use of boring-rods is well-known, while in others it is but little understood. There are whole districts of mines in which such a thing as a bore-hole is not to be found, and yet works of this kind are applicable and useful in so great a variety of instances that it is most surprising they should not be universally adopted. Take the case of sinking a shaft, for instance. Suppose the workmen come upon a stratum in which the water is quick, as it is called, and, as it sometimes happens, pours in upon the men in such quantities and with such rapidity as to overpower the pumping machinery. The consequence may be that the work may have to be abandoned, or the expenditure of a great amount of time and labour will be required to overcome the difficulty. But much, if not all, of this would have been avoided if, by means of a bore-hole, they had had early knowledge of what was awaiting them below, and they had taken their measures accordingly. So in driving a level, sufficient drainage may be obtained by a bore-hole to enable the work to go on. Again, in driving when it happens that ventilation is difficult to get at the extreme end of the workings, and it may be impossible to put in a machine, a bore-hole from a higher level, or from the surface, will yield a sufficient quantity of air to enable the men to work. I have been speaking chiefly of vertical, or nearly vertical, borings, but horizontal borings in a great number of instances are indispensable. Supposing the miners are obliged to approach nearly to the works of former times—old mines, in which the works stand full of water, which is a frequent case in coal districts—if they should come suddenly upon one of these reservoirs the water rushes in upon them, in all probability, where there is no chance of escape, and a great loss of life ensues in all the lower workings. How, then, to avoid such a catastrophe is an important question, and it is found that the only chance of safety is obtained by keeping bore-holes sufficiently in advance of the workmen; indeed, it is now rendered obligatory, by an Act of Parliament, that when miners are approaching old workings bore-holes shall be kept advancing ahead of the workmen in the new drift. These exploratory bore-holes should always be run in pairs, one on each side of the drift, and four or five yards in advance, so that when the men drive a yard of the level the bore-holes should be advanced a yard. But it may be said that if the bore-hole should tap any concealed reservoir of water, or accumulation of water in an old sump, that the water would rush through the bore-hole, and although not so rapid sufficiently so to be dangerous. That is the fact, and the borers, therefore, have a long tapering plug to fit the orifice, which being thrust into the bore-hole is tightened at once with a few blows from a mallet, and the opening is again secured. The water may then be let out by degrees, and so the whole quantity may be tapped off, and the workings relieved from such a source of continual danger. As long as that water remained there it was not sufficient to keep one bore-hole simply in advance, as it is obvious that old workings may, and, indeed, frequently do, take irregular forms, and there are cases in which, in spite of precautionary bore-holes, the water has burst through suddenly, and with a great pressure bearing all before it, and drowning a great number of men. It is, then, obviously necessary to have flanking bore-holes as well as those in advance, so as to feel the way, and to insure there being a sufficient barrier of firm ground betwixt the workings and danger. Notwithstanding every care accidents from this cause will sometimes take place, and I remember a particular instance in which a very fine colliery was destroyed a few years ago in this way. The old workings were known, and the manager, who had at first proposed to leave 20 yards of ground between them and the new workings, increased that barrier to 40 yards, but in spite of every precaution, and they had bore-holes in advance, the water was tapped, and burst through with terrific force, carrying away to destruction 40 men who were at work. The fact was that the old miners had put down a sort of drainage sump, which by great neglect was not shown on the maps, and of which the bore-holes gave no indication. Again, cases sometimes occur pregnant with great danger, in which precautionary bore-holes may be of great service. A thick seam of coal will sometimes be divided by a band of dirt, and the upper portion may have been worked, the lower one being left to the last. In working the lower seam it is clear that although you may keep a bore-hole in advance you must, unless you know what has been done in the upper seam, run a great risk of the roof breaking away suddenly, and the water ruining your levels, and drowning your men. Many cases of this kind are described at length in the valuable reports of the Government Inspectors of Coal Mines; and though such accidents are constantly taking place, it will be seen that many of them are of a character so well known, and so readily provided against, that they ought never to have occurred. A curious case occurred some years ago in France, which I mention because it shows the superiority of bore-holes over shafts for certain purposes, and that the managers and engineers of a mine ought to be prepared to use on an emergency every power which science or experience places at their disposal. The case to which I allude is, no doubt, remarkable, but it is one which may be repeated in one form or another at any time. A sudden inundation broke into a colliery in consequence of their approaching some water-charged old workings too nearly. There were a number of men engaged in some workings on the rise, and the air became pent up in those galleries in sufficient quantities to permit of their breathing for a time, but they had no food for their subsistence. Their condition became known, but it was soon found that before the water could be pumped away they must perish for lack of sustenance. Attention was then paid to some old workings near, from which it was hoped the rock might be penetrated in time to convey food to them. In the end the problem was solved by a bore-hole being got through in a much shorter time than a drift could have been made, or the water pumped out, and tin tubes being introduced they were fed with broth, and kept alive until they could be brought out. In such cases, then, the bore-hole is of great value, on account of the greater rapidity with which it progresses.

3.—I pass now to the third class of bore-holes, which are intended to gain access to subterranean bodies of water for the supply of towns, or large breweries, or other works, or sometimes merely for the purpose of forming wells, in which the water will stand at a certain level. Thus, in the London basin the clay is often penetrated to reach the chalk water-bearing stratum below. In other cases bore-holes are put down in order to form what are termed Artesian wells, because they first originated in the province of Artois, in France, in which the water-bearing stratum, being placed between two impervious beds, yields, when pierced, the advantage of a natural head of water at the surface, without the aid of pumps. In other cases the bore-holes come into play when brine-springs are to be tapped, and the brine raised for the purpose of making salt by evaporation.

4.—My fourth division is that in which bore-holes of unusual diameter are put down. These are limited, at present, to a few cases, chiefly in Westphalia and the eastern districts of France; and where instances are to be found varying from 4 feet to 15 feet in diameter. These have been preferred to shafts, because they can be put down without pumping-machinery to remove the water, or because there are special reasons connected with the deposits to be passed through.

Before I proceed further with facts of that kind, however, I must say a few words on the nature of the implements used in effecting these perforations. The simplest device used, but one which had enabled the borers to reach so great a depth as 100 fathoms or more, was that of suspending the boring-tool either by a series of rigid rods, or to a rope, whether of hemp, wire, or other material. The tool is raised to a given height by this means, and then being properly weighted, allowed to fall suddenly, and being made to turn a little at every stroke, the circular form of the perforation is maintained, and every part of the bottom of the bore-hole acted upon. It is then from time to time raised, and an apparatus put down to extract the broken material from below. If a large quantity of water flows into the bore-hole, it is a great advantage, inasmuch as it will carry in suspension all the finer portions of the debris, and lessen the quantity to be raised from the bottom. In the first place, with regard to the cutting-tool, of which there are great varieties, I have placed some of the more usual on the table, and in the Museum upstairs there is a large collection. The edges of the tool are either like those of an ordinary chisel, T-shaped, or curved, and they are always turned after every blow, either by the hands of the men who are engaged in the work, or by some mechanical contrivance when the lift is effected by machinery. Then there are tools for cutting away only the sides, leaving the centre as a sort of core; and various other kinds, according to the nature of the effect sought to be produced. In this way an experienced person can "feel" the bottom of the bore-hole, and by the ring of the tool, and the amount of vibration of the rods, can tell the nature of the ground operated upon, even at a depth of from 100 to 150 feet. In fact, a great deal depends upon the "boremaster," as the head workman, or director of the work, is called, for the success of the operations. At first a couple of men lift the rod, and allow it to fall a certain length. As the depth becomes greater four men are put on to lift; but eventually it becomes necessary to have some sort of apparatus to assist the mere manual labour. In the same way, as they get lower and lower down, fresh lengths of rod have to be added. These rods, when of iron, must be made of the best class of metal. No consideration of price ought to prevent the purchase of the very best, because if the iron is not of the highest quality breakages ensue, which are a source of delay and expense, or it may be that the tool is so lost by the fracture of the rods that it is impossible to recover it. The rods are screwed together in lengths of from 3 ft. to 9 ft., but the longer they are the more convenient they are, because they will not require so much unscrewing when raised for the purpose of clearing the hole. The rods being made, as I have said, of the best iron, their thickness is about an inch square, in which case they weigh about 22 lbs. to the fathom. The weight to be raised, therefore, is always considerable, and at great depths something enormous, and every lifting, therefore, must depend upon the excellence and security of the screw. The process of unscrewing when the rods are taken out of the bore-hole requires to be conducted with great care. A sort of key, or fork, is placed underneath the swell of the rod, near the screw, to retain the length below while that above is unscrewed and removed. Each length (say, of 9 ft.) as it comes off is carefully put away in a place arranged for the purpose, so that they may be replaced with exactitude and regularity. When all the lengths and the boring tool are extracted, a "sludger," as it is called, is lowered at the end of a rope; it is fitted with a ball socket and valve, and

being of considerable weight it extracts the debris in considerable quantities, with much facility in ordinary ground. [Mr. Smyth exhibited specimens of these and other tools used for similar purposes.] With regard to the power used for lifting the boring-rods when the depth is too great for manual labour, the simplest is that of the spring pole. A fir pole, 20 or 30 ft. in length, being firmly secured at the thicker end, a couple of blocks are placed beneath it, in a proper position to form a fulcrum to the lever. The tool is then suspended by a rope to the thinner end of the pole, which is arranged so as to just come over the top of the bore-hole. The proper impetus being given by men who take hold of the rope, the tool descends, gives the blow, and is brought up again by the elasticity of the spring pole. In not very hard ground, and with shallow operations, this simple contrivance is found to do very good work, although it requires much care and some skill in its management. We still find, however, when we come to greater depths, that in boring a series of difficulties are frequently encountered, which require all the ingenuity and experience of the engineer to surmount.

LIVERPOOL POLYTECHNIC SOCIETY.—At the meeting of members on Monday, being the close of the 31st session, the President (Mr. J. T. King), delivered the usual annual address. After a brief introduction, in which he noticed generally the industrial progress of the past year, the President said he would refer to just one development in each of the three great branches into which the engineering profession is divided.

Beginning with Mechanical Engineering, he selected the recent improvement of Mr. Alexander Morton, of Glasgow, in the steam-engine. This consists of a means whereby the benefit of a partial vacuum can be obtained on the exhaust sides of the pistons of locomotive engines without working parts, and almost a perfect vacuum in other steam-engines where a supply of water is available, and also without working parts. This improvement, which was illustrated by a diagram, consisted in passing a jet of water through the exhaust-pipe at a great pressure, obtained either by a jet of steam from the boiler, or from a head of water when that is available. By this means Mr. Morton had succeeded in maintaining a steady vacuum over 12 lbs. to the inch.

In Civil Engineering the President selected that gigantic undertaking, the iron way across the North American continent, by which in 1869 it will be possible to book through from New York to San Francisco, a distance of 3000 miles, so that the journey between these two points, which usually took 20 days to perform, may now be reckoned by hours. The progress of this great work had been delayed during the civil war, but was now advancing rapidly, sometimes at the rate of six miles a day, through a country not free from natural obstacles; the most remarkable of them is a tunnel through the Sierra Nevada, 1659 feet in length, at a height of 7042 feet above the level of the sea.

Turning to the third division of his subject—Military Engineering—the President selected the system of working heavy ordnance, introduced by Capt. Moncrieff. In this system the gun is lowered behind the parapet to be loaded, then raised to deliver its fire. The energy expended in the recoil of the gun is stored up in a heavy balance-weight, which is raised up an inclined plane; this weight also assists in lowering and raising the gun. Capt. Moncrieff has also introduced a reflecting sight, by which aim can be taken without exposing a man. With this arrangement the President suggested the possibility of earth or sand works taking the place of the costly armour-plated forts which our legislators have been establishing.

The President then gave an elaborate historic description of the application of auxiliary propellers to sailing ships, commencing with Roger Bacon's quaint proposal in 1597, that "by the figuration of art it selfe there may be made instruments of navigation without men to rowe them, as huge ships to brooke the sea, onely one man to steer them, which shal saile farre more swiftly than if they were full of men," and ending with the latest inventions of our own times. In conclusion, the President thanked the society for the honour they had conferred on him, and congratulated them on the progress made during the year.

MANCHESTER GEOLOGICAL SOCIETY.—A meeting of members was held on Tuesday, Mr. G. C. Greenwell in the chair.—The Hon. Secretary announced that Mr. Binney had resigned his office as one of the vice presidents, and it had been unanimously resolved by the Council that Mr. G. S. F. Smith should be elected in his place. Mr. Ormerod had tendered his resignation as curator, and Dr. Alcock had been appointed in his place.

INSTITUTION OF CIVIL ENGINEERS.—At the meeting, on Tuesday, the following gentlemen were elected to fill the several offices on the council for the ensuing year:—Charles Hutton Gregory, President; Joseph Cubitt, Thomas Elliot Harrison, Thomas Hawksley, and Charles Vignoles, Vice-Presidents; J. Abernethy, William Henry Barlow, John Frederick Bateman, Joseph William Bazalgette, Nathaniel Beardmore, Frederick Joseph Bramwell, James Brunlees, George Willoughby Hemans, John Murray, and George Robert Stephenson, members; and Major-General Sir W. T. Denison, K.C.B., and F. Ransome, associates.

HOGG'S GUIDE TO THE IRON TRADES.—For many years past the work bearing this title has borne a high reputation among practical men, and a more complete, yet compact, ready reckoner could scarcely be desired. The fourth edition, just issued, has been made much more valuable by the insertion of many new tables, which the greatly increased use of iron has rendered it almost essential too add. The long practical experience of the author, and his consequent ability to write with authority upon the subject, considerably enhances the value of the book. Among the new tables introduced may be mentioned—angle-iron tables, gross and net sections, which have never before appeared in print; black and bright bolt tables; and numerous tables connected with girder making, pile driving, forging armour-plate and shafting, crane hooks and shackles, &c. There are no less than 585 pages of tables, with their accompanying diagrams, and the necessary letter-press explanations; the tables on money prices and commission adapted for the payment of wages, and various other business purposes, being extremely useful, and the same may be said of the tables of weights and measures, and prices of oil. The compilation of the tables must have involved an enormous amount of labour, which, however, is thoroughly compensated for by the undoubted utility of the work produced.

ATCHLEY'S BUILDERS' PRICE BOOK.—The utility to practical men of such works as price books is too well known to need comment, but of course their value depends, to a considerable extent, upon their completeness and accuracy. The Builders' Price Book for the ensuing year, just issued by Messrs. Atchley and Co., the architectural and engineering publishers, of Great Russell-street, Bedford-square, contains a complete list of the present prices of builders' materials and labour, and of all trades in connection with building; tables for preparing estimates; articles on the construction of fire-proof buildings in concrete, and the application of terra cotta; and on building materials, and the best method of discriminating between the various qualities; and some valuable observations on the law of strikes and combinations. There is an excellent article on Concrete, which will be read with general interest, more especially from the important bearing it has upon the construction of fire-proof buildings. The book is, of course, a trade work in the strictest sense of the word, but as such is one of the most useful that has been published.

LETTS'S DIARIES.—The almost innumerable editions of these well-known diaries have just been issued for 1869. From the various sizes and forms in which Letts's Diaries are published, it is scarcely possible to conceive that the most fastidious can fail to suit his taste. In addition to the ordinary calendar matter, there is the commercial summary for the year, for which Letts's Diaries have now become celebrated, and a large amount of interesting law and parliamentary information. The diaries are well worthy of a place in every business establishment.

THE MANUFACTURE OF WATCHES AND CLOCKS.—A most interesting and instructive little work, describing briefly, but with great clearness, the rise and progress of watch and clock making, has just been published by Mr. J W. Benson, of 25, Old Bond-street, 99, Westbourne-grove, and the City Steam Factory, 58 and 60, Ludgate-hill. The book, which is profusely illustrated, gives a full description of the various kinds of watches and clocks, with their prices, and no one should make a purchase without visiting the above establishments or consulting this truly valuable work. By its aid persons residing in any part of the United Kingdom, India, or the Colonies, are enabled to select for themselves the watch best adapted for their use, and have it sent to them with perfect safety. Mr. Benson, who holds the appointment to the Prince of Wales, sends this pamphlet to any address on receipt of two postage stamps, and we cannot two strongly recommend it to the notice of the intending purchaser.

THE BAROMETER—A WARNING.—Mr. Negretti (Dec. 24) says—The barometer has now been falling since the 16th, and this morning is indicating 28·70, being the lowest reading we have had since Jan. 7, 1867. I have have said sufficient of the consequence likely to ensue if ventilation is not properly attended to in coal mines. Less pressure of barometer, more air.

BOILER EXPLOSIONS.—It is estimated that there are 69,500 boilers in use in the United States, representing a power of over 3,000,000 horses, or of 700,000 men. These 69,500 boilers are distributed as follows:—Locomotive, ; steamboat, 10,500; stationary, 50,000. At a recent meeting of the Massachusetts Institute of Technology, a lecturer asserted that, according to experiments made by himself, all boiler explosions, except in the few cases which burst in the weakest place, are caused by unequal expansion of the metal. It was stated that the greatest number of boiler explosions, especially on locomotives, occur in this country between September and January, in the interval between summer and the time when the engineer supplies feed water heated by his waste steam, the cold feed water at the above season causing unequal expansion of the metal. In order to prevent this, a device has been invented by which water is taken from the bottom of the boiler, and, by means of an automatic apparatus, furnished to the top. In this way feed water of the temperature of the steam is constantly supplied to the boiler, and unequal expansion is prevented.

MILNERS' FIRE PROOF SAFES.—The statement published some three months since to the effect that in the great fire which occurred at Callao, in August, even Milners' safes proved useless, naturally created some anxiety among the many persons who entrust their valuables to them; it is gratifying, however, to find that it was an entirely unfounded rumour. From a careful investigation it was found that not only did Milners' safe (there was only one in the fire) preserve its contents, but it was the only one that did so. Not one of the safes which failed was of English manufacture; so that, fortunately, the reputation of no English safe maker is jeopardised by the result of the fire. Mr. J. M. Perez Arrieta, of Callao, to whom the Milners' safe belonged, writes that it resisted the fire so satisfactorily, that when opened, after being under the ashes for several days, every paper found in it was in perfect preservation, and had not suffered the least.

LONDON GENERAL OMNIBUS COMPANY.—The traffic receipts for the week ending Dec. 20 amounted to 9964*l.* 8s. 9d.

HOLLOWAY'S OINTMENT AND PILLS—SYSTEMATIC TREATMENT.—Few statements are more void of truth than the assertion that for the cure of disease the ailing part alone demands attention, whereas both local and general mischief require redress. These medicaments boldly face the evils they profess to remedy; local relief and general purification progress together; the diseased portion is cured; the foul whole is cleansed. Holloway's ointment rubbed on the throat and chest exercises the most beneficial influence over sore throats, diphtheria, and cough, whether resulting from catarrh, asthma, or bronchitis. This unguent acts miraculously in arresting the extension of sores, healing ulcerations, curing akin diseases, and completely stopping all destructive inflammation.

Meetings of Mining Companies.

GREAT WHEAL VOR UNITED MINING COMPANY.

A quarterly general meeting of shareholders was held at the offices, Gresham House, Old Broad-street, on Wednesday,

Mr. GEORGE NOAKES, F.G.S., in the chair.

Mr. TRURAN (the secretary) read the notice convening the meeting, and the minutes of the last were approved.

The report of the committee of management was read, as follows:

The committee regret to state that the improvements anticipated at the last general meeting have not been realised. The lode in the 204, east of Metal shaft, continues productive, but through the unexpected intervention of a cross-course at the 216, the lode has not yet been cut at that level. It is expected, from the appearance of the lode in the winze sinking below the 204, that when cut the lode will prove productive at the 216. The tutwork explorations have been pushed forward with all possible speed, but the committee are yet unable to report any discovery of importance. It is, however, hoped that by energetic development in depth discoveries may be made that may realise the general predictions favourable to the western ground. The effects of the drought, referred to at the last general meeting, materially lessened the available water power during the first two months of the present quarter, and rendered it impossible to dress the tin sampled for the regular monthly sales. During the last month, however, the water has been abundant, which, with the improved price of tin, has enabled the sales for the quarter to be fairly maintained; and but for the exceptional cost of tributers during the last month the financial position would have been much more favourable. The committee regret that the ends and stopes throughout the mine are not so productive as they were. The utmost efforts have been made to push on the tutwork, in the hope of making discoveries that may maintain the permanent character of the mine, and they still feel confident that by further development another course of productive ground may be opened out, and for this purpose the sinking of the shafts, and the extension of the most important levels, will be continued with the utmost vigour. The mine is now, happily, replete with every appliance and facility for speedy and economical working, and any substantial improvement would immediately ameliorate the present position of the mine. The total number of persons employed at the mine in November was 627. Average price for sinking and driving, 9*l.* 19s. 1d per fathom; average earnings of 174 tutworkmen, 3*l.* 5s. per man; average earnings of 84 tributemen, 6*l.* 18s. 4d. per man.

The report of the agents was read, as follows:—

Dec. 22.—During the past quarter we have cross-cut south of Metal shaft, at the 216 fm. level, 5 fathoms, in search of the south lode, but we regret to say we have not yet intersected it, the ground being disordered by a cross-course and the lead branch, and we have to drive east to get into settled ground before we find it. The 204 has been driven east of shaft, on the south lode, 12 fathoms on a productive lode, which is at present 1 foot wide, worth 25*l.* per fathom. A winze sinking below this level, 2 fathoms from the end, is down 5 fathoms; the lode is 18 in. wide, worth 25*l.* per fathom. This is a very important point, as we look forward to its holding down to the 216, where we expect to cut it shortly. The sump-winze sinking below the 204, on the north lode, is down 9 fathoms; the lode in the bottom of winze is about 9 in. wide, producing occasional stones of tin, but not of much value. Ivey's shaft is sunk about 6 feet below the 204; the lode is 9 in. wide, with a little tin. The 204 is driven west of Ivey's shaft 3 fms.; the lode is 18 in. wide, worth 10*l.* per fathom. The 162, driving west of Ivey's shaft, is in a lode 2 feet wide, worth about 12*l.* per fathom. This end is now approaching the shoot of tin gone down in the bottom of the 157, and we may fairly expect an improvement shortly. The 157 has been driven as far west as Edwards' shaft, and we are now cross-cutting north in order to rise on the same angle that the shaft is sinking on, below the 125. Edwards' shaft is sunk about 6 feet below the 125, and is now progressing satisfactorily. At the 125 we have driven a cross-cut south towards the lode 2 fms., and we anticipate cutting it in 2 fathoms more driving. There is a great quantity of water issuing from the cross-cut, which we regard as a good indication. The 114 is driven 13 fathoms west of Edwards' shaft, on a large, well-defined lode, containing spots of tin, but will scarcely pay for sampling. We have throughout the mine 13 stopes working on tutwork, producing fair quality tinstuff, and 32 tribute pitches at tributes varying from 3s. 6d. to 13s. 4d. in 1*l.*, at an average of about 7s. in 1*l.* There is a very large extent of tribute ground opened up which will give a good profit to the adventurers. Although we have a considerable increase of water, consequent on the late heavy rains, our machinery is working well, and in capital order.—STEPHEN HARRIS, G. M. HENTY, JOHN JAMES.

The CHAIRMAN said it had been his privilege, for nearly 10 years, to be the medium of communicating to the shareholders the progress made in the development of their property, and to congratulate them upon a great success. They might well, therefore, participate with him in any feeling of regret and disappointment if, at this meeting, he was unable to hold out the same happy prospects that he had been able to do for so long a period. The committee had at each meeting always endeavoured to lay before the shareholders a truthful position of the mine, but all knew the changes to which every mine was subject. At the last meeting he told them he looked forward—and he did not say he did not still do so—to a lengthened period of productive and profitable returns; but that hope, he was bound to confess, had been somewhat lessened by the stopes having, during the last three months, fallen off. Still, in a mine like Great Vor, where they had had such extraordinarily rich lodes, and where there was such a great deal of unwrought ground to open out, it was, all would admit, but a fair hope that they would have improvements. The anxiety of the committee was that these improvements should take place before the reserves in the mine were exhausted. He hoped that in speaking thus plainly and frankly he should not dispirit the shareholders, nor supply food to those ursine animals who were ever ready to lacerate the least sore into a dreadful wound, and thus attempt to utterly destroy the property. These wretched bipeds are ever ready to catch at every chance of making shareholders' property their prey. Unfortunately, he was obliged to say, upon the present occasion, that the mine was not so rich as it was; but, as he had already said, they had a considerable extent of unwrought ground, and they hoped by energy and perseverance they would yet find it yield large and profitable returns. During the last three months they had been working some ground upon tribute, and he drew attention to the fact because such had not been their custom during the period of their great riches, True, tributers must yield some profit, but the tutwork, when the ground was so good, was more profitable. During the last month the tributers at Wheal Vor had earned very good wages; and he had had considerable correspondence with the agent upon the subject, for although he was quite prepared to pay a fair day's wages for a fair day's work, they were not justified in going beyond it. In a mine like this, where the ground had been so extraordinarily rich, the agents found it impossible to ascertain exactly what was a fair tribute until the result of the work was known. There was, however, this important feature, that the lode had been previously fairly taken away upon tutwork, and the tributers had made their high wages by working in the gunnisses and upon branches leading off the lode, which showed that the lode had been fairly worked. Another feature in connection with this tribute work was that although the returns had been maintained the reserves had been saved, as compared with what they would have been under other circumstances. As an example, he might mention that out of the 54 tons sold last month 18 were raised upon tutwork and 33 upon tribute, while the latter had averaged about 7s. in 1*l.*, showing that a good profit had been realised upon it, and, as stated in the report, but for exceptional causes the financial position would have been much more favourable. No doubt it would be exceedingly disappointing to the shareholders to find that, notwithstanding the considerable improvement in the price of tin, instead of being benefitted more largely than usual, the committee were unable with prudence to recommend as large a dividend as hitherto received by the shareholders. During the last two years the amount of ground opened out had been almost extraordinary, and it had always been accompanied with the hope that improvements would take place, so as to enable them to keep up the great position they had held for so long a period. Now, however, they would probably feel it necessary not to continue so many points of operation, but to keep to those points that present the most immediate prospects of opening out ground that would lead to discoveries; and, instead of continuing the prosecution of the intermediate levels to try the extreme ones, so as to bring the cost down to a point commensurate with the present position of the mine. He was afraid, however, that in thus adverting to their depressed position he would depress the shareholders more than was warranted by the circumstances of the case; but he felt it to be his duty to tell the shareholders the truth, and not to hide the exact position of the mine. At the same time, it was equally his duty to hold out some hopes, so as not to depress them too much, because there was most certainly fair ground to believe that considerable improvements would take place; and, therefore, like good miners, they must push on, persevere, and trust to eventually succeeding. (Hear, hear.) Having said thus much, he would proceed to submit the present financial position of the company, which was as follows:—

The audited cash account to Nov. 16 showed a balance in hand of..				£2240	3 5
Since which date there has been received—					
Tin sale, Dec. 1				3005	4 5
Tin sale, Dec. 22				3524	17 1
Sundries sold at the mines, &c				14	13 5
Total				£8784	18 4
And paid—Cash for October	£2336	5	5		
" Sundries, postage, &c	6	1	6=	2362	6 11
Balance (cash and balances)				£6422	11 5
The actual account stands this day as follows:—					
Balance as above				£6422	11 5
From which deduct—Cost for November	£2327	0	8		
Sundries, salaries, &c.	214	11	7=	2741	12 3
Balance in favour of the mines				£3680	19 2

Out of that balance the committee felt that they could not recommend a larger dividend than 5s. per share. He concluded by moving that the reports be received and adopted, and the accounts be passed and allowed.

Mr. PETER WATSON thought that one important feature in connection with tribute operations had not been referred to by the Chairman, and that was the chances they offered of leading to discoveries; and shareholders should also be reminded of the fact that the tin ground being removed upon tribute was opened some years ago. Moreover, when tributers obtained good wages it acted as a powerful incentive to others to take pitches, and thus the chances of making discoveries were increased. The pitches were set at 7s. in 1*l.*; owing to the improvement in the price of tin that amount would be equivalent to 5s. 6d. or 6s. in 1*l.* But few mines could show an average tribute of anything corresponding to it. And as to the price of tin, he might take the opportunity of mentioning that in 1866, during the midst of the disastrous panic, he predicted that tin would advance in the year 10*l.* per ton, and the readers of his "Weekly Circular" would attest the accuracy of what he was now stating. The result showed that the advance in the year amounted to 13*l.* per ton, and, in accordance with his expressed opinion, a further advance had since taken place, and he fully anticipated that during 1869 tin would further advance 10*l.* per ton. He could not help thinking that their worthy Chairman, in his desire to lay before the shareholders the actual position of the mine, had painted the picture in colours much more sombre than was warranted by the facts of the case. It was true that for the moment the "ends" were poor, and where, he (Mr. Peter Watson) would ask, was the mine whose lodes did not thus sometimes alternate in value? Without profaning the expression, he would ask, "Who could divine what to-morrow would bring forth?". To-day they were poor—to-morrow they might be rich, and the more especially in a mine like Great Vor. He had visited the mine within the past few days, and he hesitated not to say that there were many important points in operation, the attainment of which during the current three months might replace the mine in its normal position. All he could say to his fellow-shareholders was—don't be downhearted.

The CHAIRMAN said that as to having told the shareholders a too doleful story in respect of the present position of the mine, all he could say was he had always laid before them the true position of the adventure as it was at the time of each meeting; he did not want to dispirit them, nor did he desire to make any statement beyond what the mine would warrant. He admitted, with Mr. Watson, that there were great chances of making great discoveries; and if such should be their good fortune, he could assure them that he would be among the first to rejoice. (Hear, hear.)

The O'REILLY wished to know what relation the reserves bore to what they were at the last meeting?—The CHAIRMAN said that during the quarter the reserves had been reduced by 84 tons.

Mr. E. COOKE said he was upon the mine a short time since, when he ascertained, upon very good authority, that upon a moderate computation the reserves were valued at 70,000*l.*, and while the Chairman's desire was to be truthful, he should not be unmindful of the fact that there was a "silver lining," and when he alluded to the altered condition of the mine he should have pointed out that there were well-based hopes that considerable improvements might take place.—The CHAIRMAN, in reply to a question, stated that he saw no reason whatever why the returns during the current quarter should not be equal to those of the past.

Mr. MARSDEN, looking at the improved and improving price of tin, could not see why the usual dividend should not be declared upon the present occasion.

The CHAIRMAN said he had always strongly recommended that the surplus balance should never be reduced below 3000*l.*, and he did not think it would be prudent to reduce that balance below the amount that a 5s. dividend would absorb.—Mr. MARSDEN was afraid that a reduced dividend would adversely affect the property out of doors.

The CHAIRMAN said he could not be responsible for that; his duty was to study the interest of the shareholders in preserving the stability of the mine.

Mr. E. COOKE said that the declaration of a 7s. 6d. dividend, if it had not been actually earned, would adversely affect the property out of doors to a greater extent than a 5s. dividend that had been really earned.

The reports were received and adopted, and the accounts passed and allowed.

A dividend of 5s. per share was declared.

The committee of management were re-elected, and Mr. Noakes was re-appointed Chairman and managing director, and a vote of thanks was passed to him for the satisfactory way in which he continued to conduct the company's operations. The auditor was re-appointed. A vote of thanks to the Chairman terminated the proceedings.

CORNWALL HEMATITE COMPANY (LIMITED).

The first ordinary general meeting of shareholders was held at the offices of the company, Gracechurch-street, City, on Tuesday,

Mr. WM. SLATER (banker, of Carlisle) in the chair.

The notice convening the meeting and the report of the directors having been read,

The CHAIRMAN stated that the shareholders would have been called together at an earlier date, but that important negociations, which had only recently been brought to a satisfactory conclusion, prevented any definite statement with regard to the prospects of the undertaking from being made. He had now much pleasure in announcing that a very favourable contract had been entered into for the delivery of a large yearly quantity of hematite ore from the company's mines for a number of years to come, the proper carrying out of which would enable the directors to declare regular and satisfactory dividends to the shareholders. He went fully into the position of the undertaking, which, with the report and contract, appeared to be very satisfactory and cheering to the shareholders present, by whom it was considered desirable that a further limited number of shares should be offered to the existing shareholders at par, in order to strengthen the hands of the directors, and to avoid the necessity for making calls; and, after a further discussion, the report was unanimously approved and adopted.

The directors were requested to offer to the shareholders the further allotment of shares at par, and a number were at once agreed to be taken.

A resolution was then moved by Mr. BERNARD, seconded by Major WELLER, and carried—"That half-yearly meetings of the shareholders be held in the months of July and January, the next to be held in July, 1869."

The proceedings closed with a vote of thanks to the Chairman.

ST. JOHN DEL REY MINING COMPANY.

The half-yearly general meeting of shareholders was held at the London Tavern, Bishopsgate-street, on Wednesday,

Mr. J. HOCKIN (managing director) in the chair.

Mr. FREEMAN (a director) read the notice convening the meeting and the minutes of the preceding one, which were confirmed; and the report of the directors (of which a full abstract appeared in last week's Journal) was taken as read.

The CHAIRMAN, in moving the adoption of the report, said:—In the report we have informed you of the steps taken by us, in pursuance of the determination come to at the last meeting, to re-open the Bahu and Cachoeira Mines. The work has now been fairly commenced at both shafts. A, the pumping, and B, the drawing, shafts have been sunk some depth, roofs erected over them, and the necessary arrangements made for temporarily drawing the water and debris, as well as for levelling the surface to advantage. The shaft A had on Nov. 18 been sunk 50 ft., which makes the rate of sinking up to that date 1¼ ft. per day, including stoppages for timbering and all other delays. This shaft is intended for the pumps, though it will also be partially used for hauling, and will, consequently, be kept some fathoms in advance of the second shaft, B. The ground in the shaft for the first 44 ft. was soft clay-slate, requiring no blasting. It hardened, however, in descending, and at the depth of 44 ft. firm killas (slate) was met with, requiring blasting. Through it 6 ft. had only as yet been sunk, and it was, therefore, thought premature to give an opinion as to the general character of the ground likely to be met with deeper. Moderately hard and compact clay-slate, which would require no timbering, would probably be as favourable for sinking, both as regards time and expense, as softer ground, which would require timbering. Another month or two's further experience in this respect would admit of a better opinion being formed on the subject. Every possible effort is being made to expedite the sinking. The work is being carried on continuously night and day, and the men have an interest in the dispatch of the work, having taken it on contract. The very serious falling-off in the produce from the Morro Velho stamps since June last, and the causes thereof (as are referred to in pp. 5 and 6 of the report), have been the subject of much disappointment and anxiety to the officers at the mines and the directors, and their earnest attention has been constantly directed to the most judicious means of meeting the same. The principle on which they desired to act after the suspension of the mine-works by the fire was to carry on only such works as would prove remunerative. This principle was fully adopted, and concurred in by the superintendent, and large reductions were immediately made in the number of employees and workmen, till in April the cost had been reduced to about one-half its previous amount. These reductions, however, caused temporary loss in many ways. It was hoped this reduced rate of cost might have been sustained by the produce, and was so, in fact, in June. Since June some sections worked have become poorer, and unavoidable delays have occurred at others, which it was hoped might have been brought into working order in a few months. This unexpected falling off in the produce is the cause of the loss sustained during the half-year. The cost was estimated at the beginning of the half-year at about 5000*l.* a month; it has averaged 5160*l.* Had the produce continued as it was in the month of June, and which there was then every reason to believe it would, the cost would have been fully met by the produce. Under these circumstances the directors two months ago wrote to the superintendent, in the event of no increase of produce taking place, to further reduce the establishment. There has not been time for a reply to this letter, but in a letter by the last mail Mr. Gordon anticipates the board's views, and writes as follows:—

"FURTHER REDUCTION IN EXPENDITURE.—I had hoped we should have been able to have retained the present established force, and that the produce would have enabled us to have met the outlay indicated above, of about 5000*l.* per month, but inasmuch as the present yield of gold does not justify this course, a further reduction of the expenses of the establishment becomes a matter of imperative necessity. On examining the current cost, it will appear that the outlay for labour (both European and native) forms a heavy and large proportion of the expenditure of the company. The European salaries are considerable in amount, and some of these will have to be discontinued. European wages are also heavy, but keeping in view the re-opening of the mines, and the number of English miners and mechanics which should be retained for this work, it will not be easy or practicable to reduce to any considerable extent this part of the present force. The lower class labour—natives and blacks—provide the stone for the stamps, and are indispensably necessary under present circumstances for carrying on the manual labour. By reducing the number of stamping mills now at work a corresponding amount of cost and labour would be saved, and as the produce extracted in certain places does not fairly compensate for the outlay incurred in providing stone for reduction, it appears desirable to make some further reduction in this part of the company's operations and expenditure. By the end of this month I hope to be able to forward an estimate showing the proposed reductions and expenditure for the next half-year, though some of the items, such as salaries, cannot be reduced at once."

Since the close of the official half-year (August at the mines) the detailed accounts of September have come to hand, and on Monday the summary for October was received; both these months show a heavy working loss, but it should be explained that they will not so appear in the London books—that is, the cash loss, if I may so term it, to the company for these two months will be much less than the working loss. For September we know that this loss will be under 100*l.* I cannot exactly state the cash loss for October till the English packet comes in, but I do not anticipate it will be anything like so heavy as the working loss. The difference in these two accounts has been often explained, but at this critical period it is desirable to make it fully understood. It is stated at page 12 of the report that we have at the mines 30,700*l.* worth of stores in stock, paid for and charged in the London books. As these stores are taken out and consumed they are charged to cost, but if none are bought to replace them there is no charge to expenditure in the London books, and consequently the expenditure for the month will be so much less than the working loss. Of course, as these stores cost the company originally the price at which they are charged to cost, the company does lose the amount appearing as loss in the working account, stores being reduced to the extent of the difference; but what I wish to make plain is that finance is not affected in the same proportion. It is in this way that stores in stock will, to a certain extent, be equal to so much available capital. Whilst on this subject, I will further refer to finance. At the last meeting I stated that "we were then in ample funds," and that "if our remittances came forward as we hoped and expected we should probably remain

so till the end of the year;" this it will be seen at p. 11 of the report is the case, there being ample cash in hand to meet all our liabilities up to the middle of February at least, whilst the accumulations of interest on the reserved fund investments will further augment that account at that date by about 600*l.* At the Fernam Pacs estate, it will be seen that after charging all sums expended, either as working expenses or as plant, and for explorations, there has been a profit during the six months of a little over 1000*l.*, which brings the total expenditure on account of bringing the water on to the mine, erecting the stamping mill, driving the level, laying the tramway therein, as well as other works for conveying the stone to the stamps not yet completed, opening out the Gaia lode, and the exploratory works on the other lodes, at the amount already voted —10,000*l.* On Oct. 16 an unimportant run of ground from the old workings took place, which for a time interferes with the quarrying. This interruption, however, is not likely to be protracted. In the report reference is made as to the official enquiry instituted by the Brazilian Government for the purpose of investigating the cause of the fire, and he was glad to inform them that the Government had appointed the head of the police to carry out the enquiry. It appeared that during November that officer would be engaged in recruiting for the army; but they were assured that the investigation would commence in December. He concluded by moving that the report be received and adopted.

A SHAREHOLDER enquired whether Mr. Sopwith had had any previous experience in connection with Brazilian gold mines, and whether there were not many men in Brazil whose opinion could have been obtained at less cost?

The CHAIRMAN said their own mining captains were as good as any in Brazil, but they thought the 500*l.* expended to send out Mr. Sopwith would be well laid out. He had had much experience in the management of mines in this country, and would, he had no doubt, be able to give them some valuable suggestions with regard to the attainment of the objects they had in view.

A SHAREHOLDER enquired the aggregate depth they had to sink to get to the same depth as the old workings, and whether they were much troubled with water?—The CHAIRMAN said that the depth of the shaft would be 178 fms., and the depth at present sunk was 50 feet. The completion of the shaft would occupy about three years.

Mr. DAVIES thought the most important part of the question was whether they would have sufficient ore to keep them from drawing upon their reserves until they reached the lode? Would they be able as soon as the Cochoera was reached to ensure 2 oits. to the ton, which was the produce required to pay cost?

A SHAREHOLDER asked whether they had ascertained by boring the nature of the ground they had to pass through before putting down the shaft?—The CHAIRMAN said that they felt the utmost confidence that when they got down to the old lode they would find it as rich as ever; but whether they could do that work without drawing upon their reserve was a question to which he would feel great delicacy in giving an answer. With regard to boring, they had not adopted it. They knew that they must put down the shaft *coute qui coute*, and as no thoroughly satisfactory system of boring had yet been devised, it was not desirable to have borers working in the centre of the shaft to interfere with the sinkers. He was interested in a slate property in Wales, where they were about to try a new boring-machine, which, from experiments, seemed likely to give excellent results—it was, in fact, a drill mounted with diamonds. A contract had been entered into for sinking 300 yards, finding all machinery and tools, and the work was to be done for less than hand-labour. In three months the machinery would be at work, and, if successful, the shareholders might be assured that he would let them have every particular. He had seen the machine tried in some of the hardest rock he had ever met with, and it had gone through it with the greatest ease; he had also seen it most successfully tried on a hard chert rock.

The report was then unanimously received and adopted, and, the usual complimentary vote having been given to the Chairman, the meeting separated.

EAST DEL REY MINING COMPANY.

A general meeting of shareholders was held at the offices, Bishopsgate-street Within, on Tuesday,—Mr. F. W. SMITH in the chair.

The report of the liquidators stated that the attempt on their part to form a new company having failed, extraordinary general meetings were held on Oct. 30 and Nov. 19, 1867, at which new powers were conferred upon them, in conformity with which they took the best possible means of inviting tenders for the property, the result of which was an agreement, dated Feb. 29, 1868, with Mr. Henry Hayman, the Chairman of the Don Pedro Company, for a sale of the Sao Vicente Mines and estates in Brazil for the sum of 10,000*l.* A new company, under the title of the Sao Vicente Mining Company, was formed, and the shareholders generally of the East del Rey Company were invited to take shares. Notice having been received from Brazil by the last mail that the transfer of the mines and property had been completed, the Sao Vicente Company has paid to them the first moiety of the purchase-money. They are now clearing off the liabilities of the East del Rey Company, and on the receipt of the second moiety of the purchase-money, which they expect in June next, they will divide the assets among the shareholders. They regret they have not succeeded in obtaining any offer for the lease of the Emily and Capao Mines, and notice of relinquishment has consequently been given to the owners, in conformity with the contract.

The CHAIRMAN said he regretted to inform the shareholders that his co-liquidator, Mr. John Phillips, had died suddenly—an event which all who knew that gentleman must deeply deplore. The report of the liquidators, which had been in the hands of the shareholders some days, had informed them that several ineffectual attempts were made both here and in Brazil to dispose of the company's property, the largest amount offered being 2000*l.*; but after considerable negociations, an arrangement was entered into with Mr. Haymen, the Chairman of the Don Pedro Company, by which the Sao Vicente portion of the company's property was disposed of for 10,000*l.*, and capital was provided for working the mine. By the mail before last notice was received by the new company—the Sao Vicente—that the property had been legally transferred, and, consequently, at the last board meeting the directors handed over to the liquidators a cheque for 5000*l.*—the first moiety of the purchase-money, less the amount that had been previously paid. Until the claims upon the company had been adjusted, no division could be made of such amount as remained of the 5000*l.* All he could say was that there had been no delay in arranging the matters as far as the liquidators were concerned, although, on account of the apathy of the East del Rey shareholders, some little delay had taken place in connection with the formation of the new company. He moved that the report and balance-sheet be received and adopted.

Mr. FISHER seconded the proposition, which was put and carried unanimously.

A vote of thanks to the Chairman terminated the proceedings.

[ADVERTISEMENT.]

From Mr. EDWARD COOKE:—The continued firmness of the Metal Market causes a brisk demand for shares in dividend and the most promising progressive mines. With the commencement of the new year greater activity is anticipated in the market for British mines than has been witnessed for several years past. Advantage should be immediately taken to buy into a few well-selected mines in anticipation of a further considerable rise that will most probably take place during the next two or three months. In my last week's remarks I stated, upon good authority, that at the next meeting of FRANK MILLS MINING COMPANY a dividend of 4*s.* per share would be declared, and a large credit balance carried forward. I deem it right to state that a letter from the secretary of the company informs me that my information was rather premature, as the committee had not yet determined whether the whole of the current quarter's profits should not be carried to the reserve fund, thus increasing it to 2000*l.* Seeing, however, that the mine appears to have entered into a permanently profitable state, and the accounts brought up in a most respectable manner, it is not unreasonable for the shareholders to expect a division of profit to the extent of 4*s.*, and thus leave the satisfactory sum of about 1000*l.* to the credit of next account. Whether the dividend be made or not it cannot but be gratifying to the shareholders to see their property under able management brought into such a prosperous condition. I have constantly advocated the merits of this mine from the time the shares were 10*s.* to 15*s.*, and I still do so, under a firm conviction that they are cheap at 5*l.* GREAT WHEAL VORS have receded to a price at which they appear cheap. Although the mine at present is not opening up large quantities of tin, there are yet large reserves of tin ground, and this, with the chances of further discoveries (which in mining property so frequently occurs), and the encouraging state of the tin market, induces me to place this mine among those I advise for investment. At the meeting of NEW WHEAL LOVELL COMPANY on the 30th it will be seen that my advocacy of this mine and its management has been fully justified by the results. Ever since the shares were about 5*s.* I have constantly advised their being bought, and it is gratifying for me to know that many of my friends who adopted that advice now hold their shares at 10*s.* to 12*s.* 6*d.*, with all calls added. Instead of calls I hope, and believe, that they will be in the receipt of dividends for the future. With the same confidence I advise the purchase of EAST NEW WHEAL LOVELL shares. This mine contains the same lodes, and several of most promising character has already been discovered. The call just made will be sufficient to work the mine vigorously for several months, and according to present indications it is by no means unlikely good discoveries of tin will be made. This important district is proverbial for producing tin very near to surface; the shares at 5*s.* to 10*s.* are an excellent speculation. The GREAT WESTERN MINES have been well received by the public, especially as they are bought before them at a season when everyone likes to have a good balance at their bankers. Upwards of 5000 shares have already been applied for, and owing to the Christmas holidays intervening just now the share list will be kept open for a few days longer, and priority will be given for the remaining shares, according to the date of application. From my personal knowledge of these mines for some years past it is with the greatest confidence that I recommend an early application for the remaining shares. For every 20*s.* invested in this property I sincerely believe a large profit will be the result to the investor. Among the new gold mines that have been introduced lately the TAQUARIL and GENERAL BRAZILIAN are deserving of especial attention. The management being principally in the hands of the same executive as DON PEDRO NORTH DEL REY, which is making such large profits, tends to inspire great confidence. If I may be allowed to say a word about myself on the departure of another year, while I am fully aware that my predictions in some cases have not resulted so favourably as I could wish, still there have been antagonistic causes during the past 12 months (the great depression in the metal market both for tin and copper, and the almost unprecedented absence of legitimate speculation) to militate against the most reasonable predictions. Tin ore, however, has risen some 16*l.* during the past 12 months, and copper is also showing signs of improvement. I, therefore, consider that the new year now approaching will open with brighter auspices than several preceding ones, and will, I sincerely hope, prove a year of great prosperity (to use the Cornish motto) to One and All.

The Bank of England Return for the week ending on Wednesday evening showed in the ISSUE DEPARTMENT an increase in the "notes issued" of 290,745*l.*, which is represented by a corresponding increase in the "coin and bullion" on the other side of the account. In the BANKING DEPARTMENT there is shown an increase in the "public deposits" of 943,372*l.*, and in the "rest" of 5244*l.*: together, 948,616*l.*; a decrease in the "other deposits" of 121,691*l.*, and in the "seven day and other bills" of 14,712*l.*: together, 136,403*l.*—812,213*l.* On the asset side of the account there was an increase in the "Government securities" of 50,000*l.*, and in the "other securities" of 844,417*l.*—894,417*l.*, showing a decrease in the total reserve of 82,204*l.*

Original Correspondence.

THE HINDLEY GREEN COLLIERY EXPLOSION.

SIR,—The enquiry into this matter has terminated most unsatisfactorily. The desired result of such investigations is to ascertain the *cause* of such calamities, so as to prevent their recurrence. In this respect the inquest has apparently totally failed. It, therefore, in no way aids us in avoiding such accidents in future. We are no wiser for the inquest, no better prepared for dealing with mines yielding fire-damp. The public mind is left unsatisfied; they cannot feel assured that every pains has been taken. Well meaning, but on such subjects ill-informed, persons are, therefore, justified in insisting on all sorts of crude, inapplicable, and useless suggestions. Good practical subordinate officers, without scientific education, feel themselves lost in the *mist* of suggestions, theories, and possibilities.

Is it possible that it can really be believed that the exploding of *two pounds* of gunpowder in a tin bottle in any part of a coal mine *free from fire-damp* would do anything but the merest fraction of the damage done in this case? The shock felt at the pit top, the man blown into the sump at the pit bottom, the reversed ventilation, the extent of mine prevaded by the after-damp, the killing of upwards of 60 people, are clear proofs of an explosion of considerable violence. There cannot be the least doubt it was a severe explosion of *fire-damp*. There can be little doubt it originated from the firing of a shot to blast down the coal. But this was only a secondary cause, the primary cause being the presence of an explosive atmosphere.

There is no difficulty in accounting in various ways for the air being in an explosive condition. There might be too little air passed into that part of the mine, under ordinary circumstances. The two Inspectors seem to be of this opinion. The usual supply of air may have been, and probably was, on the morning of the explosion reduced by some causes. The furnace may not have been sufficiently attended to; this is not very unlikely, as it seems everybody was attending to the elections. Some part of the air-courses—perhaps at a considerable distance from the spot where the explosion originated—may have been obstructed, a thing of daily occurrence, and requiring at least daily care. The stoppings, doors, sheets, or bratticing may have become displaced or disarranged. Indeed, the continual lengthening of the brattices themselves would, as every practical man knows, by increasing the resistance to the air current reduce its quantity. The closer it was maintained the more likely it was to produce this effect. To my mind, this is a very strong reason against great lengths of bratticed air. The longer the brattices the less the quantity, whilst at the same time the longer the brattice the more air is required. Long brattices *must* be made very close to get *any air* to their extreme end, where the total quantity is little more than 3000 cubic feet per minute. The workings themselves may have given off more gas than usual, by no means an unlikely supposition. There may even have been a sudden bursting out of fire-damp, and this may *possibly* have occurred just at the moment of lighting the blast in the coal.

All these are possibilities, and probabilities too. They are the ordinary daily risks incidental to coal mining. They are the very reasons why we adopt the exclusive use of locked safety-lamps, as appears to have been the practice of this colliery. Presuming all the causes above enumerated for producing unexpectedly an explosive condition of the air to have occurred at one and the same time, no explosion ought to have ensued where locked safety-lamps only were used.

Naked flame, no doubt, was the immediate cause of the explosion. Lamps damaged or tampered with, or lucifer matches improperly introduced into the mine, would at once account for naked flame. Although I am sorry to say it cannot be denied that such reckless conduct is too often practised, yet I think it as unjust to the sufferers as it is unnecessary in this case to suppose any such delinquency. No doubt the immediate cause of ignition of the fire-damp was the firing of shots by any collier who required one at any time during the day. The question here suggests itself—Why, then, do you fire shots? why not prohibit the blasting of coal entirely? The principal reason, no doubt, is the cost it would entail, not only where powder really is required, but also in cases where there is no need for it. The presumed need for it, when prohibited, being so frequently made the pretext for increased prices, and, of course, increased cost. In addition, where coal *requires* blasting, better coal is produced by the use of powder than by any other means hitherto tried. There is now, however, a very great probability of an exceedingly simple application of the hydraulic-press or jack, to forcing down the coal by wedges, becoming successfully introduced. It is curious how these very simple applications of well-known appliances are so long and completely overlooked.

Whether this application supersedes the use of gunpowder or not, the practice of allowing any and every collier to fire his own shots, and, in fact, be his own judge whether the mine is safe for the purpose or not, is radically wrong, and fraught with danger. Suppose, from any of the causes above named, or from any other cause, the atmosphere of the mine becomes explosive, the mixture of fire-damp being *barely* sufficient to render it so, and, consequently, requiring practice and judgment to detect it with a safety-lamp, would it be prudent or safe to entrust the necessary examination, before firing a shot, to the care and judgment of every collier employed, young or old, experienced and prudent, or the contrary? Where this is the daily practice, what other result could be expected but that which has occurred in this case? and not in this only, but, as Mr. Dickinson said, in almost every case of serious explosion in Lancashire, as they had almost invariably arisen from this very cause—the indiscriminate and uncontrolled firing of shots by the ordinary workmen—where safety-lamps were used in fiery mines.

The nearest approach to perfect safety in coal mines—in addition to the best possible ventilation—is the entire prohibition of naked lights. It has been proved over and over again that the weakest point as regards safety is that at which naked lights cease and safety-lamps begin. It is a line always liable to be overstepped; it is of vast importance, and should be made as broad as possible, and scrupulously guarded. And if *beyond* this line of demarcation naked lights of any kind are *ever* to be permitted on any pretence whatever, it should only be so under the strictest possible discipline, and by the most experienced and competent persons, specially selected for the purpose. Excepting the wilful or accidental exposure of naked flame, firing shots is the most hazardous operation in a coal mine, worked entirely with safety-lamps, and requires (so long as it is permitted) to be entrusted only to competent persons of acknowledged prudence.

Much has been said about the use of the barometer. Too much reliance (as is well known to colliery officers) *must not* be placed on its indications. In many collieries no effect on the discharge of fire-damp is concurrently visible with its variations; in others the *effect* precedes its indications—fire-damp *accumulations* being more sensitive than the mercurial column.—*Dec.* 21. VIEWER.

THE HINDLEY GREEN EXPLOSION.

SIR,—From the verdict given by the jury at the conclusion of this enquiry, we are not much enlightened as to the cause of this sad catastrophe; indeed, it is not expected that men unacquainted generally with coal mining pursuits should come to any very sage or correct conclusion from the evidence which was brought before them, and given by those who had been employed in that part of the colliery on the morning of the explosion, and by others who had examined the workings and the sent of the accident subsequently. As the disastrous effects of the explosion have been supposed, by one witness at least, to have been caused in a great measure by the exploding of gunpowder in Isherwood's place, it may be observed that the effects of 2 lbs. of gunpowder exploding would not be disastrous, so far as fire was concerned, as that would not extend far, but the concussion caused by this quantity of powder exploding would be very great in confined workings, sufficient to blow down stoppings and brattice cloths, and thus derange the regular system of ventilation. But it was stated at the enquiry that a greater part of the gunpowder from Isherwood's can had been dealt out previous to the explosion, and there is understood to have been but one explosion; we may dismiss from our minds the notion that the small quantity of powder remaining in the can had much part in augmenting the explosion of fire-damp, which had undoubtedly taken place in the dip workings of the west side of the pit. It seems probable, so far as the facts given in evidence guide us, that there has been an accumulation of fire-damp, caused either by an outburst from some of the cracks in the floor of the seam (of which there were several in that part of the pit, or by one or more of the places becoming foul from accident or derangement in the long lengths of brattice used; the latter is supposed to be the more probable cause of the accumulation, and the ignition of the gas may have occurred from firing a shot in Holcroft's place, or from the powder in Isherwood's can being exploded, or from a light being uncovered in any of these places when the gas came to circulate and mix with the regular current of air. We cannot help coming to the conclusion that the explosion has occurred either through a violation of the colliery rules, by having a safety-lamp light uncovered, or through a want of due care in the management, in disallowing shot firing altogether, or only fired by authorised persons, as in the event which is supposed to have occurred—an accumulation of fire-damp—this should have passed harmlessly away if proper safety-lamps had been in careful use throughout the mine; this is the object in adopting the use of safety-lamps, and it is lamentable in this case that object has miscarried. This seems to us the point on which the whole matter seems to hinge, the safety and construction on sound principles of the lamps, as the accumulation of gas may be regarded as the result of an accident which the vigilance of the fireman may have failed to discover in time, and thus renders the question of the proper use of safety-lamps of the first importance; and it is believed this accident will have the effect of securing a more cautious use of safety-lamps, and the discontinuance of the use of gunpowder in such seams as the Arley, liable to sudden emissions of fire-damp.

It is surprising to find some people still maintain that this explosion was the result of a decrease of atmospheric pressure, in the face of the facts that the pressure was high, and had been rising for some time previous to this occurrence, and that any change of pressure acts as quickly underground on the cavities and goaves of mines as it does on instruments on the surface; this state of things would have the effect of driving the fire-damp back, and limiting its flow into the mine at the time of the explosion. We hope, as the result of this investigation, to obtain some reliable information to guide us in future, and to save us from a repetition of these distressing calamities.

Dec. 21. C. V.

THE MINES' INSPECTION OF STAFFORDSHIRE, AND THE BROMFORD COLLIERY PROSECUTION.

SIR,—Mr. Henry Johnson's letter begins with insinuations and threats against myself, for which I have no word in reply, except contempt. In a contest of abuse I willingly leave him master of the field. I thought the question at issue was one of facts and inferences, but am reminded of a certain fish that seeks to escape from the spear by blackening the water with a dirty excretion.

His account of the case "Regina *v.* Cope" is a pretty romance, with, however, one admission, that the three deceased persons were "out of the main current of air." It seems that the Special Rules are quite sufficient, yet they want altering, because they are in an important point ambiguous, and bear very unequally, and produce great hardship in such cases as that of Mr. Cope. It was, no doubt, a hardship that Mr. Cope had to pay 70*l.* costs, but is it usual for the backer, after spurring on his man to the fight, to complain of the scars to which his onset have exposed him? At any rate, there was no learned counsel to pay for on the side of the prosecution.

In closing my part in this correspondence, I have only to express a hope that those who have read it will not estimate the Mine Agents of South Staffordshire by the tone of their advocate.

AN OBSERVER.

PREVENTION OF COLLIERY EXPLOSIONS BY IMPROVED VENTILATION.

SIR,—Having been advised by the Government Inspectors, Messrs. Dickinson and Higson, to submit my plan for removing noxious gases from mines to those interested through the *Mining Journal*, I now take the opportunity to address you on the subject of the frightful explosions which continue to occur, notwithstanding the many scientific improvements which for years have been in operation. I propose to attach a hopper to a 12-inch pipe, laid in the floor, or byepaths, so as not in any way to interfere with the present ventilation. Inside the hopper is a fan, or other extracting power, driven by a steam-engine. The gases and vapours drawn from the extreme end of the mine are made to float near the surface, that they may be consumed by the fire. From the 12-inch pipe there are branches of different sizes, according to the locality, and to the liability of the gases to collect. To these branch pipes, again, still smaller pipes should be attached, some extending upward to the roof and bent, and some extending, here and there, upon the floor. As the workmen proceed, in narrow places, additional lengths are screwed on. I must leave the regulation of the small pipes to mine managers, but I would suggest that in some places a 2-in. pipe, open in two or three places. By this means the noxious gases, travelling from one point to another, are carried away by the abstractive power to the upcast shaft, out of danger to human beings. This pneumatic power should be in operation one hour before workmen are sent down for general work, and the barometer, though not to be trusted at all times, should be used in different localities, for the condensed vapours, together with the atmosphere that always collects at night, are forced down the downcast shaft in heavy weather, and have for years proved fatal to hundreds of lives.

Most persons know how gases are forced through pipes in towns and cities—by pressure. My plan is only reversed—abstract it by power. The pipes need not be lost; as workings are abandoned, or the uprights taken away, so the pipes can be removed and used at other parts as the work progresses. In many places terra cotta pipes would answer so long as attachments can be had for the small ones; and it should be borne in mind that a small well here and there in the floor is needed to receive the products of condensation. The objections which have been raised to my suggestions are—that the ventilation is already as perfect as it can be made, to which I answer that the continual explosions, and the orphans stand witness to the contrary; and that when accidents do occur, it is through the men's own carelessness. This I grant; but if all workmen were perfect we need no overlookers or managers; in every trade there are careless men and boys; therefore, it is the duty of proprietors to provide for their safety. I may be met with another objection, that my idea is expensive. My answer is—Look at the expense of an explosion, independent of the loss of life, and the number of invalids and cripples that must be pensioned. I believe that by the simple application I suggest, all proprietors would be considerable gainers. I should mention that I trust to the honour of gentlemen and proprietors of mines that they will remunerate me if my idea be of any value, and with this reservation I throw the invention entirely open to the public, for the sake of humanity, and that lives may be saved.

Kingsland-road, Dec. 15. CHARLES MARSDEN.

ON WORKING COLLIERIES SAFELY.

SIR,—In last week's *Mining Journal*, and also of many previous dates, there are numerous letters referring to the destruction of human lives in the collieries of England and Wales. Many plans are laid down about the blast-furnace, and also the air-furnace, for ventilation, but until something is put into operation to prevent the accumulation of gas underground, men's lives will always be in danger, and at any time an explosion may take place. Let men do the best they can to prevent it. The greatest wonder to me is why there are not more explosions than there are at the present time. The whole of the machinery now employed to prevent the accidents in coal mines rather tends to increase than diminish the danger. Does the blast-furnace prevent fire-damp, or take away the gas that is daily coming from the works? Will the current of air that passes through the levels prevent the gas from forming a dense body in the hollow or place broken down from the roof? I say no. It is impossible, and so long as the gas is allowed to remain in those old workings so long will accidents be happening. I am of opinion, as one who has had some experience in the mining world, that plans can be laid down to prevent the accumulation of gas in any colliery, however strong that gas may be.

Let any gentleman put himself into communication with me on the subject, and let us come to a fair understanding with regard to how it is to be done, and I am prepared with plans, &c., to work any coal mine in the world, without either blast-furnace, air-machine, or a Davy lamp—that men should work with naked candles, instead of using lamps of any kind, without fear or accident, except in the ordinary way way of mining, such as explosion of powder, fall of rock, breakage of a chain or rope, or some such thing. If this can be done what an immense saving it will be to the adventurers; besides, men would be able to do their work much better, and in less time.

Let the right men be put in their right places; let all things be done by merit,

and not by interest—then you may have men who know how to lay down machinery that will answer.—*Tavistock, Dec.* 22. THOMAS DUNN.

STANNARIES' LAW AMENDMENT.

SIR,—I hereto subjoin the resolutions of the committee meeting on the 14th inst. Since that time a meeting of the sub-committee has been held in conference with the Registrar of the Stannaries Court. At this meeting several suggestions were made, and as it is desirable that the public should know the present state of the business, and contribute further suggestions for the assistance of the committee, I venture to ask you to publish below a reprint of the practical resolutions, and of the suggestions made upon each.

Penzance, Dec. 23. THOMAS CORNISH, Secretary.

SUGGESTIONS.	RESOLUTIONS.
After "majority" to insert "of three-fourths," and to give the power to make calls to ordinary meetings held after ten clear days' notice.	Resolved,—That in the opinion of this committee it is expedient that at every meeting of adventurers specially convened for the purpose, a majority in value of the adventurers present or represented by proxy, shall have power to audit accounts and make calls.
That the necessary duration of suit on purser's petition can be shortened by order of the Vice-Warden by ten days. And that where the costs and calls unpaid after sale in such a suit exceed £50, the court shall have the same power of issuing execution in the superior courts that it now has for sums under £50 in the county court. (See Companies' Act, 1862, sec. 120.)	Resolved,—That in the opinion of this committee it is expedient that there shall be given to cost-book companies powers similar to those contained in the various Joint-Stock Companies' Acts for the purpose of recovering calls and forfeiting shares.
To substitute "two" for "three" months.	Resolved,—That in the opinion of this committee it is expedient that any meeting having power to make calls shall have power of making calls to meet prospective cost not exceeding the estimated expenditure of the ensuing three months.
To substitute "¾" for "⅔," and to provide for the protection of creditors in such cases.	Resolved,—That in the opinion of this committee it is expedient that at any meeting specially convened for the purpose, it shall be lawful for not less than two-thirds in value of the whole of the adventurers to sell the setts and plant as a going concern, reserving grantors' rights.
To confine the precedency to three months' wages.	Resolved,—That in the opinion of this committee it is expedient that the labourers' wages shall have precedency over all claims on the materials and assets.
	Resolved,—That in the opinion of this committee it is expedient that in winding-up suits no past shareholder shall be called upon to contribute to the assets of the company who has *bona fide* transferred his shares two years or upwards before the commencement of the winding-up.
That the destination of a relinquished share should be the same as that of a forfeited share.	Resolved,—That in the opinion of this committee it is expedient that relinquishments shall operate as transfers to the purser in trust for, and to place the shares at the disposal of, the shareholders.

That machinery should be provided by which any number of defaulters could be brought at any time before the Registrar of the Stannaries Court on summons, and that on their failing to show cause why they should not pay, the Registrar should have power to order payment within a given time, which order should have the effect of a judgment.

That it should be made compulsory on pursers to keep in the cost-book, or else for convenient reference, full statements of all the assets and liabilities of the mine, with full lists of shareholders, and that some tribunal should have the power of compelling the making of calls in cases of mines improperly neglecting to do so.

THE LOW PRICE OF COPPER.

SIR,—From the statement issued by the Panulcillo Copper Company, on Nov. 30, it appears that the directors complain of the position the company unfortunately is in, owing, as they state, to the depressed state of the copper trads, and low prices obtained for the metal, clearly showing that the greater the returns the greater the loss. This state of things will in all probability remain whilst the Chili shipments glut the British and continental markets. It is the over production from Chili, &c., which is doing the mischief. With a capital paid-up of 150,000*l.*, there appears to be a loss of 100,000*l.* All markets are governed by the law of supply and demand. This, to say the least, is unfortunate mining. The effect is produced by the cause, which is clear. In looking at the immense returns this company is making, 5000 tons of copper metal annually—say, at 70*l.* per ton, 350,000*l.*, yet there seems to be a loss last year of 100,000*l.* The best economy, doubtless, is to lessen the production for awhile, and see the effect on the market. Other large companies would, no doubt, do well to consider the matter. With an excess of 4000 tons of copper metal more than last year, no very great advance in the price of the article can be expected. The state of the tin market is quite the reverse, and the best answer that can be given as to supply and demand. When the price is a little depressed, the managers of mines invariably raise all the ore they can, to keep up dividends, forgetting the ultimate sacrifice they risk. The returns should be governed by the demand for and market price of the article. An answer often made by persons managing mines is—If we allow our returns to fall off the prices of the shares will drop in the market; and this seems to be a governing principle of late years. Not so formerly, when the order of the day was to make all profit from legitimate working.

Dec. 21. A CORNISH MINER.

THE VALUE OF COPPER.

SIR,—There has been much talk lately about the prices of copper, which have ruled extremely low this year—in fact, they have not been so low all this century, and even now, after a slight advance, the prices are still about 21*l.* per ton below the average prices of the last 11 years, and about 50*l.* below the highest prices ruled during that period. A great many attribute this depression to an increased production and a decreased consumption. They give you figures showing the exports from Chili, and they tell you that there are now no ships plated with copper sheathing, no more copper used for cannon, and not so much as before for copper coinage. They are not wrong in all these statements, but they forget to give you some other facts which are very much in favour of the article. In the first place, the shipments from Chili for the last eight years have been about 340,000 tons, showing an average of 45,000 tons for each year, whilst in 1868, as far as it is possible to give figures just yet, they must have been about 48,000 tons, showing, therefore, only an increase of about 3000 tons above the average of the last eight years. But then the production of copper in England has greatly decreased within the last ten years. That of Russia has nearly ceased, and the other countries where copper is produced have remained, as far as it is possible to ascertain, almost stationary, with the exception of Australia and New South Wales, where there is an increased production of 2000 or 3000 tons per annum. So, taking the whole together, the increase in the production is nothing so alarming. Now, with regard to the consumption, far from its having been reduced, it is largely on the increase. The exports of copper have been larger this year than ever, as the return by the Board of Trade shows. Though fewer ships are sheathed with copper now, yet there is still a good deal of copper, brass, and yellow metal required for every ship, especially for steamers, and there are more steamers now built than ever. There are no bronze cannon manufactured now, and consequently no copper is required for that purpose, but there are thousands of tons of copper now used yearly in England, Austria, Switzerland, and a great many other countries for cartridge cases for the breach-loading guns, and copper used for that purpose disappears, whilst bronze guns were always returned in the shape of old bronze.

With regard to coinage, it is true that in some countries nickel coins have been introduced, but, on the other hand, the requirements of the countries using copper and bronze coins are now much larger than before, in consequence of the increased population. Again, there is an increased consumption of copper for railway purposes for locomotive boilers, tubes, &c., and nobody will deny that there are more railways constructed now than ever. Russia alone has borrowed within a short time about 20,000,000*l.* for railway purposes alone, and the consequence is that she has also taken about 2000 tons of raw copper during this season, and will require more. Taking all these circumstances into consideration, where are the bad prospects of copper? Everybody in the trade, smelters, dealers, manufacturers, have helped to keep the prices down, and kept only from hand to mouth stocks; and this is why the stocks in the market are somewhat larger than formerly. Speculators have likewise objected to touch the article. But now the case is altered. The large smelters being tired of the wretched state of affairs, have formed again an association to keep the prices up. This has given more confidence to consumers and dealers, who also begin to keep a larger stock again. At the same time, speculators take more interest in the article, and all that is wanted is a reduction of the stocks in first hands.

During the past week there has been a rise of from 4*l.* to 5*l.* per ton; but what is that when we are even now only 2*l.* or 3*l.* per ton above the lowest prices ever known, and (as stated above) more than 50*l.* per ton below prices paid a few years ago. If dealers and consumers will only study the question they will surely provide themselves well with copper, and so avoid the mistake which a great many made in tin—to refuse to purchase it when it was cheap (about 90*l.* per ton) and to be obliged to pay about 17*l.* per ton more for it.

Cowper's-court, Cornhill, Dec. 23. ERNEST HAWKINS, Metal Broker.

AUDIT OF MINE ACCOUNTS.

SIR,—Will you lend your powerful aid in endeavouring to get mine accounts thoroughly audited? The importance of this being done after the recent disclosures is not to be over-rated. It is time for adventurers to bestir themselves, and let paid auditors be appointed to every mining company, with the same powers that are granted to them under joint-stock companies. AN OUT-ADVENTURER.

Hayle, Dec. 23.

THE RESOURCES OF COLORADO—No. V.

SIR,—The Clear Creek County, in Colorado, is situated south of Gilpin in a horse-shoe shaped basin, formed by a curve in the main range of mountains. This county is well supplied with fine timber on the ridges, with the intervening slopes and hill sides covered with a rich and abundant grass for stock; very little of the land is suitable for farming. South Clear Creek, and its affluents—Chicago Creek, Fall River, Mill Creek, South Fork, Quail Creek, and Bard Creek, furnish more than a thousand fine water-powers. The bars on these streams have been mined since the first settlement of the country, and although worked on to a considerable extent, still yield from $3 to $10 a day to the man, and sometimes more, under favourable circumstances. Quartz mining is to be now the leading industry, and seems to offer better inducements and advantages than in almost any other county, chiefly on account of the facility of tunnelling, and great water power near at hand for reduction works. There are four towns at present, of which the county seat is "Idaho," situated on Clear Creek, at the mouth of Virginia Canon, down which a fine road, six miles, leads to Central City. Another excellent road, 35 miles, leads to Denver, and another up the stream to Georgetown. Idaho is noted for its mines and mineral springs, and its magnificent scenery. Many people are attracted here in the summer by the two latter. The town is small, but has one of the best hotels on the mountains, with good stores, shops, mills, &c. Fall River is three miles above—has hotels, stores, &c.

Georgetown, famous for its very rich silver mines, is 13 miles from Idaho, and the creation of the past two years. It has fine houses, stores, banks, churches, schools, hotels, and all the surroundings of a mining town, and when the erection of reduction works for silver ores is complete will be one of the most prosperous towns in the State. It has a beautiful location, and has now a population of 3000 people. The silver-bearing veins are very numerous, and many of them of large size, carrying a good percentage of ore, and being found in the abrupt and precipitous sides of the mountains, offer great facilities for opening and tunnelling, thus obviating the necessity of expensive machinery for pumping and hoisting. With mines thus worked, one or two miners can open a vein and extract the ore, with no other capital than their own labour. With veins existing of large size, and with such facilities for extracting the ore, the amount that will be taken out for some years to come will be limited only by the facilities and capacity of the reduction works. The richness of these ores have been tested and proved by working in a large way. They are of three kinds—first, those that contain 20 per cent. of lead; these must be smelted, and as they nearly all contain zinc, copper, antimony, and bismuth, combined with the lead and silver, they are more suitable for reduction in a cupola than in a reverberatory furnace. Nearly all the fluxes required to melt these ores are found in the ores themselves. The second-class is the same as the first, except that it contains less lead—not more than from 1 to 10 per cent.; this ore can be reduced most profitably by washing in a reverbertory furnace, with salt to change the sulphuret of silver into a chloride, and subsequently extracting the silver by amalgamation. This process is in operation on the Reese River, in Nevada, where the millmen guarantee 80 per cent. of the assayed value to the owners of the ores. The last variety of the ore contains silver glance, or pure sulphuret of silver, without any admixture of other metals but iron. This can be reduced by crushing wet under the stamps, and amalgamating, without roasting in pans—the cheapest and most rapid way of reduction. This variety is not so abundant as the other two. The large stream of Clear Creek passing rapidly through these mines, with a great descent, affords almost unlimited power. Fire-clay of a fair quality for the manufacture of fire-brick is found on many points of this stream.

Arapahoe County has a western front of 30 miles, and extends eastward to Kansas. It lies almost wholly on the plains, and is watered by the Platte River and its numerous branches. The surface is undulating, divided into rolling ridges by the numerous streams intersecting, and no point rising to any great elevation. Timber is confined to the Platte bottoms, which produce cotton wood trees of immense size. There are extensive pineries within 40 miles. The soil of the valley is rich, and yields without irrigation. The upland is a rich gravelly loam, and when irrigated yields more largely than the bottoms, and is covered with rich buffalo or gramma grass, on which stock thrive and fatten the entire year. Small grain and vegetables grow abundantly, and in some cases produce enormous crops. A canal has been completed to Denver, at a cost of $100,000, to supply water from the Platte River for irrigation and manufacturing purposes. Several thousand acres of rich upland will thus be brought into cultivation. Coal is found in various places, but not developed to any great extent, and is costing now at Denver $10 a ton.

Denver, in this county, is the commercial and political capital of Colorado. Here is located the United States Mint, Land Office, Surveyor-General, the Governor, the United States Collector, Assessor, and Assayer. The city has fine churches, school houses, seminaries, hotels, theatres, three daily and four weekly newspapers, a fine driving park, grounds of the Agricultural Society, and all the surroundings and attractions of the metropolis of a thriving western State. Strangers gaze with astonishment at seeing such a town so far west of the Mississippi, in the heart of the "Great American Dessert," requiring but one more step in civilisation to make it perfect, and which a company has been incorporated to take, and will be accomplished in a few months—Gas and Water in the Streets and Houses. Denver is the finest city of its size west of Chicago, and no finer locality could have been selected for an inland town upon the continent. It is situated on the east side of the Platte River, 12 miles from the base of the mountains, on a gently sloping plain facing the river, giving a commanding view of the mountain range to the westward from every house and street. The business houses are fine substantial brick structures, which would be a credit to towns of the Atlantic States. The streets are very wide and regularly laid out, and from the nature of the coarse gravelly soil require no paving, but make the finest, smoothest drives in the world. Many of the private residences are beautiful, with an attractive and home-like appearance. The population now exceeds 10,000. A stranger visiting Denver is received with the utmost cordiality. The people are generous, open hearted, and whole souled. Hospitality is one of the peculiarities of their nature, and is considered a duty to the poor benighted heathen from abroad, who arrives expecting to meet people dressed in skins, a revolver in each hand, and a bowie knife between their teeth. In the summer, the thermometer ranges about 80°; the nights are delicious, cool, and dewless. The winters, as a rule, are mild, with occasional light falls of snow, and a brief period of severe cold, which soon disappears; and literally there is no disease peculiar to the climate. The view from Denver, looking westward, takes in about 200 miles of the mountains, including Long's and Pike's Peak, and is admitted by all travellers to be unequalled in the world. Always new, always changing, and presenting a different aspect and effect with every change of light and shade as the clouds float by, it has the power to attract to its contemplation, and leaves impressions on the minds of the beholder never to be forgotten. To give some idea of the prosperous state of the business of this young City of the West, the the statistics collated from a report of the Committee of the Board of Trade, derived principally from returns from the Office of the United States Assessor, exceeded in 1867 $100,000,000.

Water-power on the Platte River, opposite Denver, is estimated at 1,843,500 lbs., equivalent, with a fall of 113 ft., to 6312 horse power. Apply the volume of water to mechanical purposes, and Denver will rival the great manufacturing cities of the East; conduct a portion into the streets and houses, and it will become the most beautiful city on the continent, as it is now the most healthy.

The railroad as yet has not reached to Denver, but branches from both Pacific roads will reach there as soon as they can be built. The northern branch to Cheyenne, about 100 miles, will be built on the route, and approved by the chief engineer of the Union Pacific. That company have contracted to furnish the iron and rolling stock as fast as the road bed is ready. It is now nearly so, and there is no doubt the road will be opened simultaneously with its gigantic parent, th U. P., on July 4, 1869. This road will accommodate the whole mining region, and make an outlet for the supply of coal through the country the U. P. road runs, and which has now to be shipped from Iowa. The P. R. Eastern Division, connecting with the St. Louis, is now about 200 miles distant, but gradually growing less. Most excellent six-horse coaches now run from Denver to both roads, and through the mining districts. Other roads, radiating from Denver to all the cities in the gold and silver regions, west and south, are projected, and will be built as fast as possible, and thus make Denver the great entrepôt and commercial centre of the surrounding country. R. H. L.

PESTARENA UNITED GOLD MINING COMPANY.

SIR,—I was much pleased to read the report from this company in last week's Journal. It is to me the most satisfactory that I have seen since I have been a shareholder, not because of its being very favourable, but because it enables us to form some idea of the character and value of our properties. The report states that 788 tons of ore crushed at the three districts during the month of November produced 549 ozs. 2 dwts. 17 grs. of gold, or about 14 dwts. per ton; but what is best is the division—it states that 139 tons of Pestarena ore, crushed at Pestarena, yielded 221 ozs. 19 dwts. 19 grs., or 1 oz. 11 dwts. per ton; that 91 tons of Pestarena ore, crushed at the Battigio establishment, yielded 109 ozs. 1 dwt. 12 grs., or 1 oz. 4 dwts. of gold per ton; that 104 tons of Cani ore, crushed at the same Battigio establishment, yielded 38 ozs. 7 dwts. 1 gr., or 7½ dwts. of gold per ton; that 454 tons of Val Toppa ore, crushed at the Val Toppa establishment, yielded 179 ozs. 14 dwts. 9 grs., or 7 22-24 dwts. of gold per ton.

Now, it may be doubted whether, with a produce so low as these returns show, the *two latter mines* can be made to pay their way at all, unless, as I infer from Mr. Dean's report, the new mills at these two establishments have been a mistake, and that they do not answer the purpose. I am inclined to think there may be something in this last idea, from the remarkable difference shown by the gold produced from the *Pestarena ore* crushed at *Battigio*, and that from the *Pestarena ore* crushed at the *Pestarena establishment itself*, where I apprehend the old mills only are employed; the difference is no less than 7 dwts. per ton in favour of that *crushed at Pestarena*. Now, unless inferior Pestarena ore was purposely used at Battigio, what other reason can be given? Perhaps in the next report the company can give the expense attending the raising of the ore and extracting the gold, as other companies do, which would be very satisfactory.

Dec. 16. A SHAREHOLDER.

WHAT MAY BE EXPECTED FROM INCREASED TECHNICAL EDUCATION?

SIR,—Whilst it is so fashionable as at present to declare that the trade of the country is languishing for the want of increased facilities for working men to obtain scientific knowledge, it is refreshing to find that there are still some who are willing to admit that the only kind of scientific knowledge obtainable in science schools and colleges is of comparatively little value in connection with the ordinary affairs of business. The fallacy of supposing that any practical advantage can be derived from teaching abstract science to working men was ably pointed out by Mr. E. W. Binney, F.R.S., at a recent meeting of the Manchester Geological Society, and as Mr Binney holds an equally high position in the scientific and industrial commercial worlds, his opinion cannot fail to be of immense practical value. Manchester, as he very justly observes, has always stood pre-eminent for working scientific men, and he naturally enough enquires—"When we are in the city of Dalton, the Henrys, Hodgkinson, Roberts, and a host of men who have raised it to its present position, why should we look to universities or colleges? What help has been received from them in building up this great hive of industry?" In stating, by way of reply, that it has nearly all been done by amateurs and practical men, Mr. Binney does but echo the opinion which has ever been entertained by the most successful men of business in the country, although that opinion is comparatively seldom expressed, because it is met by the working classes and the diplomed science students with the unfounded assertion that the men of business do not mean what they say, and merely desire to prevent any improvement in the social position of their workmen.

Questions which Mr. Binney very pertinently addresses to a particular class might be put with equal advantage to the employers of labour, as well as to the superior class of workmen in every branch of our national industries; and it cannot be doubted that the replies would remove many of the erroneous impressions now entertained. Mr. Binney asks the gentlemen connected with the coal trade of Lancashire what assistance they have had from professors of science, either at Owen's or any other college; or what they expect for the advancement of the sciences of geology and mining from colleges, or young boys brought up at colleges? A college, he says, can certainly educate a man, no one doubts that; and a good man, when well educated, will be better than one without education, but still it is impossible to have men made to order by colleges or other similar institutions. For such remarks as these Mr. Binney is entitled to the best thanks of the community at large, for there is more sound sense in a hundred words of such observations as these than in a hundred times that number of the technical education suggestions too often put forward. It is not to the extension of technical education on the Continent that we should attribute the ability of continental workmen to compete with those of England better at present than they could before the Exhibition of 1851, but rather to the neutralising influence which that gathering had upon technical education; and the irretrievable injury which the working men of England declare (and not altogether without reason) to have been inflicted upon them by international exhibitions generally, and by that of 1851 in particular, arises entirely from the directors of foreign labour having learned that technical education was a mistake, and that the English model was that which should be copied.

Look at those inventions of the last 20 years which have played the most important part in connection with the development of great industries, and enquire how many of them are due to the science-knowledge which is now said to be essential to the welfare of the practical man? Even Perkins's invention of the aniline colours can scarcely be traced to the chemical instruction received from Hofmann, owing to the extremely wide difference between the theoretical methods which Hofmann taught and that which has since proved of practical and commercial value; yet Perkins's invention is, probably, that which affords the most prominent instance of the practical application of a science-student's knowledge. As a rule, however, the practical men to whom we are indebted for our best inventions have not had the advantage (?) of scientific instruction, and the great merit of the inventions has been that given effects have been produced by means so simple that theoretical scientists would have declared them inapplicable to the purposes intended. Yet it is not contended that technical education is altogether worthless, but merely that the disadvantages resulting from any systematic course of science-teaching, when given to working men, are greater than the advantages, and that technical education given to those who have not already acquired some practical experience in the business they propose to follow produces a class of men who are troublesome to themselves, and useless to their employers. Science-students are objectionable in the workshop and in the manufactory, because they have been taught that they possess advantages of which their fellow-workmen cannot boast, whilst the fact is that the theoretical notions acquired from professors of science require so much modification when applied in practice, that the uneducated man can usually learn as much science as is useful to him more quickly than the science-student can unlearn that which to him is worse than useless, because it leads him to apply his energies in the wrong direction.

What little experience has been acquired in this country of science-schools and schools for the extension of technical education is decidedly unfavourable to any increase in their number. Scarcely a class at the Royal School of Mines can boast of a dozen students, and those from which the greatest results were anticipated, such as the Mining Class of Prof. Warington Smyth, has had even a smaller number than that, yet the number of students who pursue the Royal School of Mines curriculum is larger than find profitable employment, and the few that are so employed are engaged upon the Government Survey, which is continued with the almost sole object of preventing passed students from too completely demonstrating the worthlessness, practically speaking, of the scientific instruction they have received. The Working Men's College not having the advantage of large Government grants to support it is in a still more lamentable condition—its continued existence being almost entirely dependent upon the support it receives from lawyers and commercial clerks, who use it as a kind of literary institution, and caring little for the quantity or quality of instruction to be gained there. It will be the same with every school established for scientific or classical education to the working man, much money will be uselessly expended in attempting to do that which practical men well know is better left undone.—*Manchester, Dec.* 23. MENTOR.

Price 1s. 6d., by post 1s. 8d.,

NOTES ON THE MINES OF THE RIO TINTO DISTRICT: Containing a DETAILED REPORT upon the MINES and on the MEANS of RENDERING THEM MORE PROFITABLE, as well as an ACCOUNT of the PROCESS of TREATING POOR ORES of COPPER, successfully used there.
By JOSEPH LEE THOMAS, Assoc.I.C.E.
London: MINING JOURNAL Office, 26, Fleet-street, E.C.

THE IRON TRADE REVIEW.—The Iron Trade Review is now recognised as the leading organ in which the interests of the iron manufacturers of Great Britain are represented. The aim of the proprietors is to provide a journal which shall be worthy of this important branch of national industry. The following matters receive special attention:—Detailed reports of the state of trade in all the important manufacturing districts, with latest intelligence of meetings, and price lists of pig and finished iron. Occasional notices of the Continental and American trades. Condensed information relative to the proceedings of railways and other public companies which have a bearing upon the iron trade. Notices of scientific improvements applicable to the manufacture of iron. Reports on such labour questions as may arise. Notes on Parliamentary Bills bearing on the trade. In addition to the above, leading articles on important topics appear in each issue, and great care is taken that the information contained in the Review shall be thoroughly reliable. The annual subscription is one guinea, payable in advance.' Advertisements are inserted on reasonable terms, which may be ascertained on application.—Published for the proprietors, at the Iron Trade Review office, Middlesbrough-on-Tees; and 50, Grey-street, Newcastle-on-Tyne, by M. and M. W. Lambert, printers.

The Great Western Mining Company,

In 6000 shares—On the Cost-book System.

A Committee of Management will be chosen at the first general meeting of shareholders.

BANKERS—THE ALLIANCE BANK (LIMITED), LONDON.

SECRETARY AND LONDON MANAGER—J. H. MURCHISON, ESQ., 8, AUSTINFRIARS, E.C.

LOCAL MINING MANAGER—CAPT. EDWARD ROGERS.

SOLICITOR—TUFNELL SOUTHGATE, ESQ., 7, KING'S BENCH WALK, TEMPLE, LONDON, E.C.

ABRIDGED PARTICULARS.

This company is formed for the purpose of acquiring leases and agreements necessary for working the Great Western Mines, situate about 3 miles from Marazion, Cornwall, and for the purchase of all the valuable and extensive plant, steam-engines, machinery and materials, dressing houses, surface works, and erections, &c., with a view to continuing the explorations, and for the development of the mineral resources of the property with the utmost rapidity and efficiency, and on a more extensive scale.

These extensive and valuable tin mines are situated in one of the best and most productive tin mining districts in Cornwall, being a little to the south-west of the Tregoning and Godolphin granite range of hills, around which are the justly celebrated Old Vor, and the present Great Wheal Vor, Great Work, and other old and extensive mines, which have yielded millions sterling in value of tin and copper ores, and given enormous profits therefrom. Great Wheal Vor may be considered at present one of the richest and most profitable tin mines in Cornwall, for it is making an annual profit of about £9000 to £10,000, while the tin ground further laid open is probably worth about £70,000, independent of daily discoveries. The shares in this mine some years ago were selling for about £4 to £5, and in about two years rose to £45, £46, or £270,000 for the mine, it being divided into 5908 shares. The total profits divided in the last few years amount to from £75,000 to £76,000.

It will be observed, as the agents stated in their report of 25th July, 1866, that if there was an advance of about £15 in the price of tin, the mine would be worked at a good profit by erecting suitable machinery. The price of tin ores, which was then about £41 per ton, is now £57 to £58, thus shewing the advance already of about £16 to £17 per ton, and it is believed that a further very considerable rise in price will shortly take place.

When the mines were disposed of, in 1866, Banca tin was selling at £77 per ton, while the present price is £103, being a rise of £26; Straits tin was then at £74, and is now £100, being a rise of £26; Cornish tin was then at £85, and is now at £103, being a rise of £18.

To show the value of these properties, and the estimation in which they were once held by the public, it may be as well to state that these extensive mines realised a market value of about £75,000 to £80,000.

It is believed that from the workings of the late and former companies of adventurers, the sales of tin and copper ores must have amounted to between £200,000 and £300,000.

The amalgamation of these mines was frequently contemplated by former adventurers, but from a diversity of separate interests it could not be carried out. By the arrangements now made the water charges will, it is expected, be something like 30 per cent. less than formerly, as it is proposed to erect a large and powerful pumping-engine at a shaft already sunk about 50 fathoms, and in the centre of the present most productive part of the property, and thereby drain the most important operations effectually and economically. To carry this out, and to open up the mines on a larger scale, require further capital, the result of which, it is believed, will in a short time give a return of about 25 to 30 tons of tin per month, yielding a monthly profit of about £600 to £700.

The machinery and surface works of these mines are among the most extensive in Cornwall, and must have cost former adventurers from £15,000 to £20,000. They consist of a 41-in. cylinder pumping engine, with two 11-ton boilers, a 40-in. cylinder pumping engine, a 32-in. double rotative engine, for pumping, drawing, and stamping, with two 10-ton boilers; a 24-inch double rotative engine, for pumping, drawing, and stamping, with one 8-ton boiler; drawing gear, and 62 heads of stamps, a 12-feet bed calciner and large dressing-floors, with buddies, frames, trunks, sheds, flat-rods, pitwork, &c.

A perusal of the reports will further show that the company will possess an extensive and most valuable run of mines in working condition, only requiring more efficient machinery to produce very satisfactory results.

There has been seldom, if ever, such a favourable opportunity presented to the mining public, where so good a chance of realising large profits can be had for so slight a risk.

The company has been formed on the Cost-book System, and divided into 6000 shares, upon which a call of £2 per share has been made.

The present proprietor, with the view of a more extensive development of the property, has agreed to dispose of all the plant, engines, machinery, materials, pitwork, pumps, dressing houses, surface works, and other erections, for the sum of £6000, and has signed the cost-book of this company for 500 shares, on which he will pay the £2 per share. From a careful calculation gone into, it is believed that about £4000 to £5000 will be ample for the purchase and erection of the requisite machinery, and for the more extended and vigorous development of the mines.

Some wealthy and influential capitalists in the western part of Cornwall, resident not a great distance from the mines, have taken an interest in the company, and signed the cost-book for the same. A large number of shares has already been taken, and for the remainder of the shares applications will be received. The sum of £1 per share to be paid on application, and the remaining £1 per share on allotment. Priority will, of course, be given to the earliest applicants.

An inspection of the plans and sections of the various lodes already operated on will show the magnitude of the tin ground which has been discovered.

Applications for shares, in the form annexed, accompanied with the deposit, may be made to the Alliance Bank, London, Liverpool, and Manchester; or to J. H. MURCHISON, Esq., the secretary and London manager.

FORM OF APPLICATION FOR SHARES.

To the Committee of the Great Western Mining Company.

Having paid to the bankers of the company the sum of £ , being a deposit of £1 per share, on shares in the above company, I hereby request that you will allot me that number, and I agree to accept such shares (or any less number allotted to me), and to pay the remaining £1 per share on allotment; and I hereby authorise you to place my name on the cost-book and register of shareholders of the company, for the shares alloted to me.

Name in full .....

Date ..... Residence ..... &c.

N.B.—As nearly 5500 out of the 6000 shares have been subscribed for, the APPLICATION LIST will be CLOSED during the ENSUING WEEK.

WATSON BROTHERS' MINING CIRCULAR

WATSON BROTHERS,

MINING AGENTS, STOCK AND SHARE DEALERS, &c.

1, ST. MICHAEL'S ALLEY, CORNHILL, LONDON.

MESSRS. WATSON BROTHERS return their most sincere thanks for the great patronage bestowed and confidence reposed in their firm for 25 years, and to assure their friends and clients it will be their earnest endeavour to merit a continuance of both.

Messrs. WATSON BROTHERS have made arrangements for continuing their weekly Circular, which has had a large circulation for many years, to the columns of the *Mining Journal*, their special reports and remarks upon mines and mining, and state of the share market, will in future appear in this column.

In the year 1843, when Cornish mining was almost unknown to the general public, attention was first called to its advantages, when properly conducted, in the "Compendium of British Mining," commenced in 1837, and published in 1843, by Mr. J. Y. WATSON, F.G.S., author of "Gleanings among Mines and Miners," "Records of Ancient Mining," "Cornish Notes" (first series, 1862), "Cornish Notes" (second series, 1863), "The Progress of Mining," with statistics of the Mining Interest, annually for 21 years, &c., &c. In the Compendium, published in 1843, Mr. WATSON was the first to recommend the system of a "division of small risks in several mines, ensuring success in the aggregate," and Messrs. WATSON BROTHERS have always a selected list on hand. Perhaps at no former period in the annals of mining has there been more peculiar need of honest and experienced advice in regard to mines and share dealing than there is at present; and, from the lengthened experience of Messrs. WATSON BROTHERS they are emboldened to offer, thus publicly, their best services to all connected with mine or the market, as they have for so many years done privately, through the medium of their own Circular.

Messrs. WATSON BROTHERS transact business in the purchase and sale of mining shares, and other securities, payments of calls, receipt and transmission of dividends, obtaining information for clients, and affording advice, to the best of their knowledge and judgment, based on the experience of more than 30 years active connection with the Mining Market.

Messrs. WATSON BROTHERS also inform their clients and the public that they transact business in the public funds, railway, docks, insurance, and every other description of shares dealt in on the Stock Exchange.

Messrs. WATSON BROTHERS are also daily asked their opinion of particular mines, as well as to *recommend* mines to invest or speculate in, and they give their advice and recommend mines to the best of their judgment and ability, founded on the best practical advice they can obtain from the mining districts, but they will not be held responsible, nor subject to blame, if results do not always equal the expectations they may have held out in a property so fluctuating as mining.

Messrs. WATSON BROTHERS having agents and correspondents in all the mining districts, and an extensive connection among the largest holders of mining property, have the more confidence in tendering their advice on all matters relating to the state and prospects of mines and mining companies, and are able to supply shares in all the best mines at close market prices, free of all charge for commission.

SATURDAY.—Active demand for Great Retallack, at 2¼ to 3. Drake Walls, 19s. to 21s.; Grenville, 32s. 6d. to 35s.; Prince of Wales, 28s. to 30s.; Seton, 65 to 70; Chiverton, 5¾ to 6¼; East Caradon, 7⅛ to 8; Providence, 32½ to 35; East Grenville, 3¼ to 3½; Great Wheal Vor, 11 to 12.

MONDAY.—Moderate amount of business in Grenville, at 33s. to 36s.; Prince of Wales, 28s. to 30s.; Drake Walls, 19s. to 21s.; Providence, 32½ to 35; Chiverton, 6 to 6⅛; Chiverton Moor, 5½ to 6; Tincroft, 16 to 17; Chontales, 2½ to 2¾; Don Pedro, 3⅝ to 3⅞.

TUESDAY.—The market is not quite so active to-day. Chiverton, Grenville, East Grenville, Uny, Drake Walls, New Lovell, and Don Pedro chiefly in demand. Chiverton, 6 to 6¼; Grenville, 32s. 6d. to 35s.; East Grenville, 3⅜ to 3⅝; Uny, 3⅞ to 4⅛; Drake Walls, 18s. to 20s.; New Lovell, 34s. to 36s.; Don Pedro, 3⅞ to 4⅛; Prince of Wales, 28s. to 30s.; Crebor, 6s. to 8s.; Seton, 65 to 70; and Chontales, 2⅜ to 2½.

WEDNESDAY.—Tin mines in active demand, and shares difficult to get. Drake Walls, 18s. to 20s.; Great Wheal Vor, 11 to 12; New Lovell, 34s. to 36s.; Prince of Wales, 27s. to 29s.; Providence Mines, 33 to 35; Tincroft, 16½ to 17; Wheal Grenville, 32s. 6d. to 35s.; Wheal Kitty (St. Agnes), 3¾ to 4; Uny, 3⅝ to 4⅛.

THURSDAY.—Very little business doing, and prices almost nominal. Carn Brea, 22 to 24; Chiverton Moor, 5¼ to 6; Prince of Wales, 25s. to 27s. 6d.; West Chiverton, 59 to 60; New Lovell, 34s. to 36s.; Great Wheal Vor, 11 to 12; Grenville, 32s. 6d. to 35s.; Drake Walls, 18s. to 20s.; Wheal Chiverton, 5½ to 6.

Mining Correspondence.

BRITISH MINES.

CALDBECK FELLS.—W. Francis, Dec. 18: We are stripping down the copper from the north side of the winze sinking on the junction of north and caunter lodes, in the 90 west, the lode in the winze is worth 3½ tons of copper and lead per fathom. The lode in the winze sinking under the 90 west, on north lode, is worth 15 cwts. of blue lead per fathom; sinking by two men, at 10*l.* per fm. In the 90 west, on north lode, the lode has improved, and is now worth 15 cwts. of blue lead per fathom; driving by two men, at 16*l.* per fm. We are rising in the stope in back of the 90 west, on north lode, and the lode in the rise is worth 1 ton of blue lead per fathom; rising by six men, at 7*l.* per fm. The stope in back of the 90 west, on caunter lode, is worth 10 cwts. of blue lead per fathom; stoping by two men, at 3*l.* 15s. per fm. In the 90 east, on north lode, the lode continues poor; driving by two men, at 12*l.* 12s. per fm. The stope in back of the 90 east, on north lode, is worth 1 ton of copper and lead per fathom; stoping by four men, at 4*l.* 10s. per fm. We have resumed the driving of the 90 east, on south lode; driving by two men, at 3*l.* 10s. per fm. The lode in the 80 west, on north lode, is worth 15 cwts. of blue lead per fathom; driving by four men, at 9*l.* 9s. per fm. The cross-cut driving north in the 80 west, on south lode, is being driven by two men at 8*l.* 10s. per fm. The stope in back of the 80 west, on north lode, is worth 1 ton of copper and lead per fathom; stoping by four men, at 5*l.* per fm. We have suspended rising in the back of the 80 west, on caunter lode, and the men are now engaged driving south from rise, to effect a communication with the south lode, in order to pass deads through to fill up and secure the stopes on caunter lode. The stope in back of the 80 east, on south lode, is worth 8 cwts. of grey lead per fathom; stoping by two men, at 2*l.* 18s. per fm. Wilkinson's stope in back of the 70 west, on north lode, is worth 10 cwts. of blue lead per fathom; stoping by two men, at 4*l.* 10s. per fm. There is no change worthy of notice in the 60 west, on north lode, driving by four men, at 8*l.* 5s. per fm. We have completed the mill in the back of the 60 west, on north lode, and having holed the same to the stopes, shall commence stoping again in a few days. We are still driving the cross-cut south in the 30 west, on north lode; driving by two men, at 7*l.* 10s. per fm. The three stopes in back of the 30 are worth as follows:—Hewer's stope, 13 cwts. of grey lead per fathom; Nicholson's stope, 14 cwts. of blue and grey lead per fathom; Brown's stope, 16 cwts. of blue and grey lead per fathom. In the shallow level west, on north lode, in order to prove the lode, we are cross-cutting north by two men, at 6*l.* 10s. per fm. In the 70 east, at Crown Point, we are putting up a rise by side of the lode, to the 50 above, and about 6 ft. up the rise, in order to prove the lode we cut into the same, and as far as seen into it is worth 10 cwts. of blue and grey lead per fathom; rising by four men, at 2*l.* 5s. per fm. The stope east of rise, in back of the 50 east, at Crown Point, is worth 8 cwts. of grey lead per fathom; stoping by two men, at 2*l.* 2s. per fm. We are driving on the south part of the lode west from cross-cut, in the 50 east, at Crown Point, and the lode in the same is worth 8 cwts. of grey lead per fm.; driving by two men, at 3*l.* per fm.

CAPE CORNWALL.—Richard Pryor, Francis Hosking, Dec. 22: The ground in the 100 fathom level cross-cut, driving north of engine-shaft, is still strongly mineralised with mundic and copper ore, and we are frequently meeting with small branches which contain rich yellow copper ore. The ground in the 70 fm. level cross-cut, south of shaft, is just the same as for some time past.

CARADON CONSOLS.—S. Bennetts, Dec. 22: The gossan lode in the 78 west is 3 ft. wide, and of much the same character as before; the ground is somewhat harder about it, and a little more peach making its appearance, with fully as much gossan as is found between the two cross-courses. The main lode is not as yet cut in the south cross-cut. The Clymo's lode, in the 78 west, is 1½ to 2 ft. wide, dredgy throughout, but not quite so orey as it was a few days since.

CARADON AND PHŒNIX CONSOLS.—Wm. Johns and Son, James Kelly, Dec. 22: We have been cutting some crossing heads in the 60, east of cross-cut, on No. 2 lode; a pretty deal of water is coming from the north, which has induced us to put the men to cut in to see whether there is any more lode standing in this direction. The lode in the 50 east is without any alteration since our last; it is very regular, containing abundance of mundic, spotted with copper ore. Of the lode in the winze sinking below the 40 the portion carried is about 4 ft. wide, producing good stones of ore and blende. In the extreme bottom we have cut a hollow lode, which entirely drained the winze; no doubt we shall now hasten down the sinking of this quickly.

CWM DARREN.—R. Clocker, Dec. 23: I am glad to be able to report that as our shaft gets deeper the silver-lead ore improves. We are now down a little more than 5 fathoms under the 10, at which place the ore commenced to show itself in paying quantities, and gave us everything to hope that we had entered into the beginning of a great course of ore; these expectations are being realised, and from our position with the neighbouring mines—East Darren, Bronfloyd, &c. (in which we are placed in the centre)—leads me to express my opinion that we shall in going deeper be equally successful as the mines now mentioned. We are carrying our shaft 18 ft. long, and as the lode is very wide (of which 8 ft., or more, we are carrying with us) it produces a large quantity of ore, as nearly all of it must be made merchantable. I should advise your giving instructions to prepare a parcel ready for market as soon as we can conveniently do so, for the space we have for depositing the ore is almost filled up. We may calculate for three months more before getting down to the 10, and we shall then have to cut plat for depositing the ore, and (say) three months more for the extension of the levels east and west before we can commence stoping, when we may fairly expect the Cwm Darren Mine to enter the Dividend List. In the meantime should you give us instructions to clean the ore we have broken, and from what we are raising from sinking our engine-shaft, we shall be able to replenish you with the funds necessary for laying open the work stated above.

DEEP LEVEL.—Dec. 22: In the deep level west of junction, on Pant-y-Go vein, the lode is about 18 in. wide, producing some good stones of lead ore; we save all the stuff from this level for dressing at present. The lode in the deep level going south, west on the deep level vein, is about 14 in. wide, composed of limestone, spar, and spots of lead ore, letting out a little more water than usual. The two tribute pitches over this level behind the present end are in a lode 3 ft. wide, producing 12 cwts. of lead ore per fm. The 204, west of Eyton's shaft, on Pant-y-Go vein, is still in a hard bar of unproductive ground. The winze sinking below the 204, east of Eyton's shaft, is in a promising vein 18 in. wide, unproductive at present. The two tributes over the 204 are worth about 1 ton of ore per fathom each. In the 174, west of Pant-y-Go shaft, on Pant-y-Go vein, the lode is 4 ft. wide, producing occasional stones of lead ore. The repairing of Pant-y-Go old engine-shaft is being pushed on as fast as possible. The dressing, &c., is going on regularly.

EAST GUNNISLAKE AND SOUTH BEDFORD CONSOLS.—James Bray, Dec. 23: There is no change in the 36 fm. level cross-cut south. We continue to drive a cross-cut north in the 16, where we hope to meet with the lode shortly. We are getting on very slow with our surface-work at Impham, in consequence of so much wet weather.—P.S. The lode in the Impham adit is 5½ ft. wide, producing 5 tons of ore per fathom.

EAST PROVIDENCE.—J. Nancarrow, W. White, Dec. 21: The lode in the 50 east is worth 2*l.* per fm. The 70 east is improving; lode worth 3*l.* per fm. The cross lode in the winze below the 94 is smaller than when we began to sink, but has a permanent appearance, and is worth 4*l.* per fm. The cross lode in the 106 opens out very well; it is still large, and is worth 12*l.* per fathom. The caunter lode, in the 122, is looking better, and yielding tin to save.

EAST SNAEFELL.—W. H. Rowe, Dec. 22: I have bargained with the shaftmen to drive north and south at the 35, at 10*l.* 10s. per fm.; ground being hard. The 20 sump is sinking at 9*l.* per fm., and the 21 driving south at 7*l.* per fm. No change of consequence at either place as yet.

EAST WHEAL GRENVILLE.—G. R. Odgers, W. Bennetts, Dec. 23: The lode in the 120, east from the shaft, is 1 ft. wide, composed of quartz, &c. The lode in the 110 east is 20 in. wide, worth ½ ton of ore per fathom. The rise above this place will produce 2 tons of good ore to the fathom. The lode in the 95 east is 15 in. wide, worth 1 ton of ore to the fathom. The lode in the 85 east is 1 ft. wide, worth 1½ ton. The lode in the 75 east is not looking so well, the lode having split up in branches. The lode in the 65 east is without any change. The lode in the 55 east is 20 in. wide, worth 1½ ton of ore to the fathom. The lode in the rise will produce 2 tons of ore to the fathom. The lode in the 45 east is worth 1 ton of ore to the fathom.

EAST WHEAL BASSET.—W. Nancarrow, Dec. 23: In the 140 cross-cut south towards the middle lode, the ground is letting out more water, which is an indication that we are getting near the lode. In the 130, east of new shaft, we have just commenced a cross-cut towards the south lode, and expect to cut the same in about 3 fms. driving. In the 130, west of No. 1 cross-cut, the lode it 1½ ft. wide, worth 7*l.* per fm. for copper ore, and looking kindly for a further improvement. In the 130, east of No. 2 cross-cut, the lode is 1 ft. wide, producing occasional stones of copper ore, and with a little easier ground we might soon expect the lode to improve. The stope in back of the 125, east of rise, is worth 15*l.* per fathom for copper ore.

EAST WHEAL RUSSELL.—W. Richards, Dec. 23: The middle lode, driving east of the Tunnel, is 3 feet wide, containing flookan, prian, mundic, quartz, a little black oxide, and yellow copper ore. The north lode, driving east of the Tunnel level, retains its size of 2½ ft. in width, containing capel, quartz, peach, mundic, and yellow copper ore; the ground is a little more compact at the present time. The weather having been so very wet and stormy, we have not yet commenced to costean the eastern part of the sett, but we shall do so as soon as the weather becomes more settled.

GAWTON COPPER.—G. Rowe, G. Rowe, jun., Dec. 19: All the timberwork connected with the whim and engine-shaft is made complete to the 82, and the machine kibble, drawing from the present bottom, in good order. The 82 cross-cut, north from engine-shaft, is being pushed forward with all possible vigour, and is already extended 9 ft. in a beautiful mineralised killas. The lode in the 70 east is not looking quite so good as last reported on. The winze men below the 70 are still engaged in opening ground on the north side of the lode, which course we purpose to continue for some short distance further previous to taking down the ore-bearing part of the lode which is worth in places 6 tons of good quality ore per fathom. The lode in the 60 east is 6 feet wide, producing good stones of ore, and showing a kindly appearance. The lode in the winze and stope going down below the 60 is worth 4 tons of ore per fathom. The lode in the rise in back of this level is worth 2 tons of ore per fathom.

GOGINAN.—Dec. 15: The lode in the present end of the 110, east of winze below the 100, is 4 ft. wide, worth 15 cwts. of lead ore per fm. In the 100, east of rise, the lode is 3 ft. wide, showing spots of ore, and likely for an improvement. The four stopes over the 100, east of rise, are in a large lode, yielding on an average 16 cwts. of lead ore per fathom. The lode in the stope over the drift, 15 fms. west of rise, is 4 ft. wide, worth 11 cwts. of lead per fathom. The north lode in the 60 east is 4 ft. wide—a strong and kindly lode, containing good strings of lead ore, and from all appearance is likely to improve. A discovery here would be of great importance to the mine, as it is in whole ground standing to the surface. The tribute pitches in the old part of the mine, will yield on an average 12 cwts. of lead ore per fathom.

GREAT NORTH DOWNS.—W. Rich, Dec. 23: The ground in Sleggan's shaft is rather stiffer for sinking than it has been; we are continuing the sinking on the south side of the lode, and are anxious to push down the shaft as fast as possible; we have not cut into the lode lately, consequently there is no alteration to notice. The 84 end, west of Sleggan's, is easier for driving, and the lode carries good stones of ore. The winze below the 74, just over this end, is worth 15*l.* per fathom. The 84 end east is poor at present, the winze below the 74, coming down on this end, is worth 8*l.* per fathom; when these winzes are holed we shall have good ventilation in the bottom of the mine. The stopes in the 74 west are worth 7*l.*, 8*l.*, and 10*l.* per fathom. The tin lode in the 48, west of King's, is worth 15*l.* per fathom. We are breaking good tin stones in the 84, west of King's, on the north side of the copper lode. The 84 end, west of King's, has a very promising appearance, and the ground easier for driving; we hope this end will speedily improve. The two stopes in the 84, west of King's, are worth 10*l.* per fathom each. The south lode in the 64, east of Butler's, yields saying work for copper. The stopes in the 64 east are worth 30*l.* per fathom in the aggregate. The stope in the back of the 75 east is worth 10*l.* per fathom. The 75 end, east of Butler's, is worth 10*l.* per fathom.

GREAT NORTH LAXEY.—R. Rowe, Dec. 22: The 84 fathom level end north (in new ground) is to-day worth ⅛ ton of lead per fathom.

GREAT RETALLACK.—G. R. Odgers, J. Harris, Dec. 22: No. 1 Lode: The lode in the engine-shaft sinking below the 30 fm. level is 3½ ft. wide, composed of branches of spar, containing good stones of lead, embedded in a very congenial killas; therefore, we like the appearance of this shaft very much indeed. The lode in the 30 fm. level north is 18 in. wide, with a good branch of lead in the back of the level reaching half-way down the end, worth fully 7 cwts. per fathom; this lead is dipping north, and of which we have a very good opinion. The lode in the 30 south is also 18 in. wide, and producing good lead; in fact, we took from this end this morning a good pile of lead ores, but the lode is bunchy, yet we have a very good opinion of its appearance. The lode in the 20 fm. level north is 15 in. wide, and worth 5 to 6 cwts. of lead per fathom. The stopes above this level are much the same as before reported.—No. 2 Lode: The lode in the 40 fm. level south is 15 in. wide, and in the north end it is 3 ft. wide, composed of quartz, &c., with occasional stones of lead ores; the latter end is letting out a great deal of water: we have a favourable opinion of this lode. The lode in the winze sinking below the 30 fm. level north is 2 ft. wide, composed of quartz and white iron, with good lead.

GREAT SOUTH CHIVERTON.—J. Nancarrow, J. George, Dec. 19: The lode in the 20 east is 1½ ft. wide, composed of flookan, prian, mundic, lime, &c., looks very promising for lead, and the ground is better for driving. The 40 east seems to be approaching a porous lode, as it is letting out more water. The lodes in the 40 west is getting together; it is a very promising end, and will yield 3 cwts. of lead per fathom. The 50 west is still very hard, and spare for driving, but comparing the bearing of the lode, and its appearance with what it was in the 40, we must be very near the run of lead. The 50 east is improving in appearance. The mine, on the whole, looks better.

GREAT WHEAL BADDERN.—Richard Pryor, H. Tregoning, Dec. 19: We have set the following bargains to-day. The 75 to drive west of the cross-cut, on the tin lode, by six men, at 16*l.* per fathom. The lode is still large, and producing rich stones of tin, but within the last week we have met with a branch crossing the end, which for the time has made the ground a little more spare for driving, but this, we believe, is only temporary, as there is more water coming out of the ground. The 75 to drive west of the cross-cut, on the lead lode, by six men, at 7*l.* per fathom. The lode at this time is split into branches, which we believe is produced by the influence of the cross-course, and judging from present indications, we think we are near the same.

GWYDYR PARK.—W. Smyth, Dec. 22: There is no particular change in the shaft at Gwyn Llifion since last report. In the Vucheslas deep adit end the lode is a little improved, and yielding nice stones of lead ore, and likely for a further improvement shortly.

LOVELL CONSOLS.—W. Chappell, Dec. 23: We are making good progress in driving the 12 fathom level west; lode 15 in. wide, producing more tin than when last reported on; the lode is precisely the same character as that in the bottom of the adit, where it is worth from 20*l.* to 30*l.* per fm.; as the tin dips west we have further to drive to cut the rich part of it, but from the improved appearance of the end this last week we have not much further to drive to reach the dip; in fact, I am daily expecting to report a rich course of tin in the west end. Our progress in clearing the adit east is rather slow, as the back of the levels are run down for some fathoms.

MARKE VALLEY.—J. Truscott, Dec. 23: Marke's Lode: The 124 east is producing saving work. The 124 west is producing 2 tons of ore per fathom. The 112 east is producing 1½ ton of ore per fathom. The 100 west is poor.—Sarum Lode: The 100 east is producing 2 tons per fm. The 100 west is driving by the side of the lode.—Rosedown Lode: The 90 west is producing 1 ton per fm. The 80 west is producing 1 ton per fm. The 60 west is producing 2 tons per fm. The 50 west is producing 1 ton per fm. The 40 west is producing 2 tons per fm. The 30 west is producing 2 tons per fm. The 20 west is producing 3 tons per fm.

MAUDLIN.—J. Tregay, Dec. 19: We are prevented from sinking further in the bottom of the deep adit, as the water is too quick, until arrangements are made for pumping; the lode there is large, producing 1½ ton of copper ore per fathom, and promising for improvement. The lode in the rise in back of deep adit level will produce 1 ton of copper ore per fathom.

MINERA UNION.—W. T. Harris, Dec. 23: Low's Shaft: The ground in the 40 yard level cross-cut going east consists of a white limestone of a favourable character.—Boundary Shaft: The ground in the 60 yard level north is easy for progress. The pitch in the bottom of this level south is worth 15 cwts. of lead per fathom.—Flue Shaft: The pitch in the bottom of the 40 yard level north is worth 10 cwts. of lead per fathom. The pitches in the roof of this level are worth 8 cwts. of lead per fathom.—Brabner's Shaft: The ground in the 80 yard level cross-cut consists of slate and chert; satisfactory progress is being made. The pitch in the back of this level is worth 15 cwts. of lead per fathom. We are preparing the 60 yard level north, and expect to get through the run this week.

NEW CROW HILL.—T. Trelease, A. Kent, Dec. 22: We are busily engaged altering our pitwork at New Crow Hill engine-shaft, which we are progressing with fairly. We were a little hindered last week by the heavy floods, which damaged our head-weir, but it is again repaired, and we are able to resume our work as usual. Our pitch at the back of the 55 is abandoned, the lode having been worked small and poor. Our other pitches in the 35 are without change.—Wheal Louisa: The engine-shaft has been divided and cased down to the 75 in the past week, and the cross-cut is in extension towards the lode through rather stiff country. The lode in the 60 fm. level end has improved in appearance, and it seems more regular than it has been; the lode here as far as we can see is about 3 feet wide, composed of mundic, spar, and blende, with capel, &c., but without lead to value. The pitch in this level is yielding saving work for the stamps.

NEW GREAT CONSOLS.—Richard Pryor, Thos. Bennetts, Richard Trathen, Dec. 21: In the past week we have set the 74 fm. level plunger-pole to work, and have again forked the water to this level. Ellis's engine-shaft men are at present putting in trap-doors, and taking up the water at the different levels, &c., and as soon as this work is completed we shall at once drop the lift to the bottom (86). The rise in the back of the 40 is communicated to the bottoms sunk from the 20, which has given us good ventilation, and has laid open a valuable piece of ground. The stopes and other bargains throughout the mine are just the same as when last reported on, with the exception of Rendle's shaft, which, in consequence of the heavy falls of rain, has prevented us from sinking it for the last week. We are getting on as fast with the dressing as the weather will permit.

NEW TRELEIGH.—S. Michell, Dec. 23: We have cut into the lode close to the end at the 78, east of shaft, and I am glad to say it is looking quite as well as at any time in the drivage of this level. We have now 2 fms. of lode standing, which will be taken down next week, when you shall have further particulars. The stope west of the winze, below the 70, is still worth 2½ tons of ore per fathom, which looks well for the 78 west, which is about 6 fms. behind this winze, and where the lode is looking more promising than for some time past. Owing to the unusual wet season we are obliged to work our engine faster than we have for some time, but I am glad to say we are able to keep the water. We shall be able in our next week's report to inform you the number of tons of ore we shall be able to sample.

NORTH DOWNS.—F. Pryor, J. Williams, Dec. 21: Setting Report: We set the 95 to drive east of shaft by six men; the appearance of the lode is rather improved. The 85 is set to six men; at this point of operation we have an enormous quantity of water, and although it has retarded our progress we do not despair of the result. The 60 from point of horse is much improved in size and appearance; we hope in our next to speak of its value. The 40 has improved, not worth less than 6*l.* per fathom. The 60, on the south lode, although poor at this time, we consider it advisable to continue until we get parallel to the ore on the north lode. We have set the sump-winze to sink by six men; the value we will report in our next. There is no other change to mention.

NORTH RETALLACK.—G. R. Odgers, J. Harris, Dec. 22: Since our last advice we have been unable to do anything towards the sinking of the winze below the 10 fm. level, on account of the rising of the water to the 10 fm. level, caused by the heavy rains; this, as soon as we get a few days of dry weather, will subside, when we shall resume the sinking of the winze, where we have a highly promising lode.

NORTH TRESKERBY.—Richard Pryor, Thomas Jenkin, Dec. 24: Tresidder's Shaft: The lode in the 130, driving east of shaft, is opening up tribute ground. The lode in the 120, driving east of shaft, is worth 4 tons of copper ore per fm. The lode in the 110, driving east of shaft, is worth fully 2 tons of copper ore per fathom. The lode in the winze sinking below the 110 is worth 2 tons of ore per fathom. The lode in the stope in back of this level is worth 3 tons of ore per fathom. The ground at Doctor's new shaft continues much the same for sinking, and we are glad to say that within the last two or three days we have met with the lode, which is 2½ ft. wide, composed of as fine a gossan as can be seen in any part of this mine. The shaft is down about 17½ fms. below surface, which is an important point. All the other places remain without any change to notice.

OLD GUNNISLAKE.—H. Rickard, Dec. 23: Parker's shaft is in regular course of sinking by six men and three labourers, the lode being about 5 ft. wide, composed principally of gossan and spar—a very promising lode as can be seen; letting out a little water, but nothing as yet to impede the progress of sinking without the aid of the engine. The lode in the 48 or deep adit level west is of much the same character, being full 4 ft. wide, of gossan, spar, and prian, letting out a little more water as the end advances. We are pushing on these two points

as fast as possible, and as soon as Parker's shaft reaches the required depth, 2 fms. below the deep adit, we shall put in bearers and cistern with all speed and place the lift in the cistern. We have commenced bringing home a small stream of water to feed the boilers with (which will save coals) instead of pumping it to surface from the deep adit.

PRDN-AN-DREA UNITED.—Wm. Tregay, J. Thomas, Dec. 19: Sump: The engine and pitwork are working well, but the influx of water is so great that we have not yet forked below the 110. In the 100 east rise there is no change to notice; the lode producing occasional stones of tin. In the 68 east the quality of the tinstuff is without much variation, and we are still getting away large quantities.—Cobbler's: The 90 north cross-cut has struck the north lode; we have not yet got far into the lode, but so far as seen it produces rich stones of tin, and presents every appearance of being a rich lode. We are pressing on the end as rapidly as possible; the water is coming away very freely.—North Mine: In the 55 west the lode is standing alongside the old level; being sufficiently stoped for that purpose, we have set the end to drive on the course of the lode by six men, the lode here being worth 25*l.* per fm. We have set the stope in the back to nine men, the lode being worth 20*l.* per fm. In the 47 north cross-cut we have now cross-cut the lode about 4 ft.; we have not yet seen the north wall; the part already opened is worth 20*l.* per fm. The pitches in the upper levels are producing their usual quantities of tin, and are looking well for production.

PENHALLS.—S. Bennetts, W. Higgins, Dec. 18: The lode in the 70 west is worth 10*l.* per fm.; and east, in the same level, 7*l.* per fm. In the 60 west the lode continues large, but unproductive. The 55 east, on the new lode, is worth 6*l.* per fm. In the 50 cross-cut north another branch has been cut having a good underlie and bearing; we think the principal part of the lode is near. The 45 east, on new lode, is worth 7*l.* per fm. There has been but little of the Pink lode broken in the 44 east since last reported on. The ground in the 40 west, on the Pink lode, is good; the lode, however, is small, and producing some tinstuff, but not of much value. The winze below the 40, on new lode, is worth 6*l.* per fathom. At the Pink Mine nearly all the lode is taken up, down on the gossan in the Shop shaft, the gossan cut through, but the lode not seen on the other side. The lode in opening out the 30, west of Shop shaft, is large, and producing fair quality tinstuff. The stope above this level is worth 10*l.* per fm. The 20 west end is worth 10*l.* per fm. We expect to sell 16 tons of tin to-morrow.

PENHALE UNITED.—R. Pryor, H. Bennetts, J. Pryor, Dec. 23: The lode in the 90, driving south of Phillips's engine-shaft, continues to be worth 25 cwts. of lead per fathom, and in the winze sinking below the 80, and 3 fms. behind, is worth 5 cwts. of lead per fathom, and improving.—Hall's Shaft: The water is in fork 8 fms. below the 80, and the shaftmen are engaged in dropping the pitwork and clearing and securing the shaft below this point. The lode in the 80, driving north of this shaft, is still improving in its appearance and character, and is yielding some fine stones of lead. All other places throughout the mine are just the same as when last reported on. To-morrow being our pay and setting a full report shall be sent you.

PENHALE WHEAL VOR.—W. H. Martin, Dec. 22: I am very much pleased with the great change of ground in the engine-shaft, sinking under the 94; at no period since we commenced sinking from the 74 has the ground been so soft, and the men are making rapid progress. Since we cut the lode in the north cross-cut, at the 84, the men have been engaged opening a little further north, but to-day I have put them to drive west on course of the lode, which is 8 in. wide, composed of peach, mundic, blende, and a little tin; the lode is letting out a great deal more water at this point than at the 74, from which I conclude that by driving on its course the lode will improve in size.—Penhale Lode: The lode in Ritchie's shaft, sinking under the 60, is now 1 foot wide, and yields a large quantity of mundic and blende, intermixed with tin; under such a quantity of mundic as we have sunk through in the shaft, I have not the least doubt but that we shall find courses of tin, more especially, as this shaft is situated near "Great Bounder Cross-course" which proved so favourable in the adjoining mine. No lode taken down in the 60 west end since last report. The tribute department is without change.

PERRAN SILVER-LEAD.—M. Wasley, Dec. 22: We accomplished the driving last week, and commenced the shaft as intended; the ground is continuing favourable, so that we may expect satisfactory progress to be made.

PRINCE OF WALES.—J. Gifford, W. Gifford, Dec. 22: In the 65 east we are still taking down the lode, which so far as seen maintains its former value, 25*l.* per fathom. In the 65 cross-cut north we are progressing favourably, but as yet nothing has been met with. In the 55 east the lode is 1½ ft. wide, composed principally of capel and gossan. No. 1 stope, in the back of the 55 east, east of winze, is worth 10*l.* per fathom. No. 2 stope, in back of the 55 east, west of winze, is worth 20*l.* per fathom. The rise in the 55 east is progressing favourably. In the 55 west the lode is 2 ft. wide, composed of capel and quartz, with stones of copper ore and mundic. Two stopes in back of the 55 west are worth on an average 10*l.* per fathom each. The new south lode in the 55 west is 2 ft. wide, composed of capel, quartz, and mundic, with occasional stones of coppel ore, but not to value. The new south lode in the 45 west is worth 1½ ton or copper ore, or 7*l.* 10s. per fathom. The stope in back of the 45 west is worth 12*l.* per fathom.

SOUTH CONDURROW.—J. Vivian and Son, Wm. Williams, Dec. 19: The 93 has been driven 8 fms. south on the cross-course; the cross-course is 2 ft. wide, and of a very favourable character; the present price for driving on it 2*l.* 10s. per fathom. The 82 cross-cut, west of King's shaft, has been driven 4 fms., and is passing through softer and whiter granite than we had in the levels above; the present price for driving 9*l.* per fathom. We have according to the underlie about 4 fms. more to drive to intersect the lode. The 71 cross-cut, west of King's shaft, has been driven through the lode, and the granite forming the south wall intersected; the lode is of much the same size and character at this level as at the 61, and we shall now stope down a parcel of tinstuff from the western side of the cross-cut to ascertain more fully its value. In the 61, west of King's shaft, having again cross-cut through the lode at a distance of 21 fms. west from the first cross-cut, we find the lode producing some good tinstone, and of about the same width as at the other points at which it has been seen, but containing seams of granite; about 9 ft. of it is of much the same quality as the lode is where we are stoping it further east. We shall now again drive west on the lode, the price for driving being 6*l.* per fm. In the 51, west of Vivian's shaft, the lode is producing some good copper ore, and looking promising for improvement. In the 51, east of Old Tye shaft, the lode has improved in appearance, being now 2 ft. wide, and impregnated with copper and tin. In the 20 east, on middle lode, the lode is 1½ ft. wide, and tinny. The tin stopes in the back of the 61, are yielding tinstone of the same average quality as already reported, the average size of the lode being about 3 fms. We sold yesterday 4 tons 4 cwts. 2 qrs. 27 lbs. of black tin, at 62*l.* 12s. 6d., realising 265*l.* 7s. We have had to stock the floors of the additional stamping-mill, which with the unavoidable increase of water on the floors of the small stamping-mill, has absorbed about 4 tons of the tin sent to the mills. The floors are, however, now nearly stocked, and the next sale will show fairly our monthly produce of tin (with our present stamping-power), which will be found to be quite equal to the estimate we gave in the report to the last general meeting of shareholders. We shall also sample on Wednesday next about 35 tons of copper ore, which we think will realise about 230*l.*

SOUTH DARREN.—J. Boundy, Wm. H. Boundy, Dec. 19: No lode has been taken down in the 70 west since our last report. The lode in the 60 west is 1 ft. wide, producing a little lead and copper, and from its appearance we have every reason to expect a more productive lode here soon. The lode in the 50 west is 2 ft. wide, and worth for lead and copper 10*l.* per fm., and is promising for further improvement. No change in any other part of the mine to notice. We are making fair progress in the dressing department towards the next sampling, notwithstanding the very wet and boisterous weather which we have had. We shall sample lead next week, weather permitting.

SOUTH FOWEY CONSOLS.—F. Puckey, Dec. 21: The engine-shaft is now sunk to the 30, including 3 ft. for the fork; the shaftmen are engaged in casing and dividing the shaft, which will be completed in a few days. We shall then cut a plat, and hasten on the driving of a cross-cut south with all possible speed to intersect the various lodes at the 30, and hope and expect, within a very short period, that we shall have some good lodes to report on.

ST. JUST AMALGAMATED.—R. Pryor, W. White, R. Wearne, Dec. 22: The lode in the 62, driving north and south of Phillips's engine-shaft, is large, and producing good stones of tin. In driving south 3 or 4 fathoms further we shall intersect Davies's lode, which has been very productive in the upper levels.—Saveall's Lode: The lode in the 100, driving east of shaft, is worth 5*l.* per fm., and in this level, driving west, the lode is worth 5*l.* per fathom. The lode in the 90, driving west, is worth 7*l.* per fathom.—Pryor's Lode: The lode in the 2, driving west, is 5*l.* per fathom.—Owl Lode: The lode in the 40, driving north of shaft, is worth 3*l.* per fathom. In the 20, driving north of ditto, the lode is worth 4*l.* per fathom. The lode in the 10, driving north, is worth 5*l.* per fathom. In the 10, driving north on the branch, the lode is worth 5*l.* per fathom. The lode in the winze sinking below the adit level, on the branch, is worth 6*l.* per fm. The lode in the 20, driving east of Reddipper shaft, is worth 6*l.* per fm.

VIGRA AND CLOGAU.—W. J. Holman, Dec. 23: During the past week visible gold has been again broken from the lode in the end of level, west of No. 6 shaft; the lode is 4 ft. wide, and at the present time a little gold can be seen in the solid rock. In the level east from same shaft the lode is 3 ft. wide. The lode in the end of level east from No. 1 shaft is 2½ ft. wide, and still remains poor. The other works on various parts of the mine are progressing as usual. At the reduction works the stamps are again idle, and the sand obtained therefrom is being worked up as quickly as possible, the gold from which will be forwarded you early in the next week.

WEST BASSET.—G. Lightly, Dec. 23: No alteration of importance has occurred at this mine during the past week. Our sampling of copper ore to-day is computed at 224 tons.

WEST CARADON.—W. Johns, N. Richards, Dec. 21: Since our last report in the 170 cross-cut, north of Allen's lode, we have intersected another branch containing fluor-spar, mixed up with yellow copper ore. We are forcing on the cross-cut with all speed, with the impression that the main part of the lode is still ahead of us. The south part of Allen's lode, in the 170 east, is about 2 feet wide, and is divided by a horse of granite. With the 104, east on Dunstan's lode, and the 114, west of winze (Gonamena) we shall soon effect a communication; the lode in the latter end is over 3 ft. wide, containing good stones of copper ore, and when holed this piece of ground can be worked to a great advantage. The 17, west of cross-cut, on the north part of Gilpin's lode, is much the same as last reported—carrying a regular leader of yellow copper ore. At Marina's shaft, in driving the 30 cross-cut both north and south, four lodes have already been intersected; the last one met with is in the extreme end north, and since we have started the end east, over 2 fms. have been driven; when intersected in the cross-course the lode was split up; now in the present end it is forming a regular lode about 1½ ft. wide, from which we are saving the greater portion of the lode, and is looking very kindly at such a shallow depth. We are now quite satisfied that the shaft is in the right position, and shall resume the sinking at our next setting-day.

WEST GWM ERFIN.—Dec. 16: The lode in the adit level, east of engine-shaft is 2½ ft. wide, composed of spar, blende, and clay-slate, with strong spots of lead ore, and a great deal of water issuing from the end. At the same level the lode going east of cross-cut south (55 fms., east of engine-shaft) is 4 ft. wide, intermixed throughout with lead ore—a very promising lode, and we hope something good will be met with here shortly. No change worthy of remark in the cross-cut north at the adit level. We have two extra men repairing the adit level near its entrance, where the timber is very much decayed.

WEST ST. IVES.—Thomas Uren, Dec. 23: The lode in the end in No. 1 lode is still of a very promising character, producing good stones of tin. The lode all through is fair stamping work. We are also going on well with the cross-cut to cut the south tin lode.

WEST WHEAL KITTY.—Wm. Vivian, Dec. 23: In the middle adit end, west of western shaft, we are driving on the north part of the lode, which is about 4 feet wide, worth about 10*l.* per fathom for tin. We are stoping the back of the middle adit, with six men, at 7s. per ton of tinstuff; the lode is worth about 15*l.* per fathom. We are stoping the back of the deep adit, with two men, at 8s. per ton of tinstuff. We intend to have our next sale of tin on Wednesday, the 6th of January, 1869.

WEST WHEAL TREMAYNE.—S. Roberts, Dec. 22: We are getting on favourably with the sinking of the engine-shaft, although the ground has been somewhat stiff; the lode is still in branches of about 3 in., 6 in., and 10 in. wide, in a width of about 3 feet, and very good in copper ore. The 32 west is much the same as it was last week both in size and quality. In the 20 end west there has been nothing done for want of air; to-day we have put these men to sink a winze in the bottom of the same level, on a lode 12 in. wide, composed of mundic, lead and copper ore.

WHEAL AGAR.—E. Rogers, Dec. 23: The sinking of the flat-rod shaft will be completed to the 170 to-morrow, when we shall commence at once to cut plat, and at the same time case and divide the shaft; we have not yet intersected the lode, but the water is issuing freely from the south side towards the lode, which leads us to believe we are not far off. The engine-shaft is down to the 130; we shall also commence to cut plat, case and divide, and put in skip-road as fast as possible, and then open on the course of the lode both east and west. The lode in the 110 is 2½ ft. wide, producing saving work for tin.

WHEAL BULLER.—James Inch, James Brown, Dec. 23: Setting Report: Last Friday being our setting-day, we set the following cutwork bargains and tribute pitches:—The 92 to drive east of Stevens's shaft, to six men, at 10*l.* per fathom; the lode in this end is large, producing tin, but not to value; the stope under the 80 fathom level, west of this shaft, to three men, at 3*l.* per fathom, worth for tin 6*l.* per fathom. The 60 to drive east, on the north lode, to two men, at 9*l.* per fathom; the lode in this end is producing 1¼ ton of copper ore per fathom. Hocking's shaft is sunk to the 92, and is now suspended for a month. The shaftmen are now employed driving east on the course of the lode, in order to cut plat; as soon as this is done, and the skip-road brought down, we shall resume the sinking of this shaft with all possible speed; the lode is 6 feet wide, producing good stones of copper ore, mundic, and tin, worth for the latter 12*l.* per fm. The 80 to drive west, on Stevens's lode, to four men, at 10*l.* per fathom; the lode in this end is producing good stones of tin. The stope under the 70, west of the cross-course, on the north lode, to six men, at 7*l.* per fathom, worth for tin 15*l.* per fathom. The stope under the 70, on this lode, east of the cross-course, to four men, at 4*l.* 10s. per fathom, worth 7*l.* per fathom. The end to drive east, to two men, at 7*l.* per fathom. The lode in this end is producing good stones of tin. The stope in the back of this level, to six men, at 6*l.* 10s. per fathom, worth 10*l.* per fathom. The stope under the 60, west of Knuckey's winze, to six men, at 5*l.* 10s. per fathom, worth 9*l.* per fathom. The stope east of this winze, to six men, at 6*l.* per fathom, worth 10*l.* per fathom. The stope west of Bartle's winze, to six men, at 6*l.* per fathom, worth for tin 9*l.* per fathom. We set nine pitches, to 31 men, at an average tribute of 10s. in 1*l.*: 60*l.* standard for tin.

WHEAL COURTENAY.—J. Gifford, Dec. 22: On Saturday we set the deep adit to four men, at 65s. per fm., stent 4 fms.; the part of lode carried is 2½ ft. wide, composed of capel and peach, with spots of mundic and copper ore intermixed, but not to value.

WHEAL CREBOR.—J. Gifford, Dec. 22: The following was our setting on Saturday:—The 120 east to six men, to carry as much of the lode as the agent directs, stent the month, at 90s. per fathom; lode very large, composed of quartz, capel, and white iron, with spots of copper ore intermixed, and letting out much water. The 120 west to six men, to carry as much of the lode as directed, stent the month, at 4*l.* 16s. per fathom; lode 3 ft. wide, composed of capel, quartz, killas, white iron, and mundic, with occasional spots of copper ore, but not to value. The 96 fm. level cross-cut south to two men, stent 2 fathoms, at 90s. per fathom. Wallis's pitch, in back of the 108 east, to two men, for one month, at 13s. in 1*l.*, and 12s. 6d. per produce, and 7s. per ton for mundic. Clemens's pitch, in the 84 east, to two men, for one month, at 10s. in 1*l.*, and 12s. 6d. per produce, and 4s. per ton for mundic, and to have 6*l.* for sinking 1 fathom to prove whether the lode is standing south of the level. The other tribute pitches time not out. The water appears to be draining in the bottom of the 108 east, under Davis's pitch, and I hope to set a pitch there in a few days.

WHEAL FRIENDSHIP.—Dec. 21: Bennett's Lode: The lode in the 170, west from the flookan cross-course, is 18 in. wide, composed of peach, spar, and mundic. In the 150, west of Whitburne's cross-cut, the lode is 3 ft. wide, and is yielding 2½ tons of ore per fathom. In the back of this level we continue to rise on the north part of the lode, which is now yielding 3 tons of ore per fathom, for the length of the rise, 10 ft. The sinking of Caroline's shaft is progressing favourably. No change in either of the cross-cuts.

WHEAL GRENVILLE.—G. R. Odgers, W. Bennetts, Dec. 19: The lode in the 140, west from the new shaft, is 2 feet wide, and worth 6*l.* per fm. for tin; this lode has a very promising appearance. The lode in the 130 west is 2½ ft. wide, producing low stamping work. At the 120 west the men are making good progress in getting through the elvan we had in the cross-course; we find on the west side of it some good tinny work; we, therefore, look for a productive lode when the ground gets a little more settled. There is no change in the rise above the 100 west. The lode in the 100 west is 4 ft. wide, and producing tinny work. In the 90 east we have unwatered a good piece of tinny ground, from which we calculate to raise for this sampling nearly 1 ton of tin; the lode in the end is worth fully 15*l.* per fm. The lode in the winze sinking below the 90 west is worth 5*l.* per fm., and opening good tribute ground. The ground in the 90 cross-cut continues in very favourable granite—in fact, it is in precisely the same kind of ground as accompanies the lode which we are driving to intersect. The tribute pitches are looking much as usual, and to-day we have sampled from them some good piles of tinstuff from which we infer that we shall sell a very good parcel on Dec. 31.

WHEAL KITTY (St. Agnes).—S. Davey, Wm. Polkinghorne, Dec. 19: In the 82, driving west of Holgate's shaft, the lode is worth for tin 12*l.* per fm.—New Shaft, Pryor's Lode: The ground in this shaft during the week has become a little better for sinking. In the 94, driving west of shaft, the lode is worth for tin 25*l.* per fm. In the 94, driving east of shaft, the lode is worth for tin 16*l.* per fathom. In the 82, driving west of shaft, the lode is worth for tin 13*l.* per fm. In the 82, driving east of shaft, we have met with a cross-course, which has thrown the lode a little to the south. The lode in the rise in back of the 82, west of shaft, is worth for tin 13*l.* per fm. In the 65, driving west of shaft, the lode is producing stones of tin.—Caunter Lode: The stope in back of the 82, on this lode, is worth for tin 10*l.* per fm. In the 44, driving east of cross-cut, north of Pryor's, the branch is improved, and now worth for tin 5*l.* per fm.

WHEAL MARY ANN.—P. Clymo, J. Harris, J. Stephens, J. Skeat, Dec. 24: Clymo's shaftmen are still engaged in cutting a trip-plat in the 240 fm. level. The lode in the 230 north is 1 ft. wide, producing a little ore; in the same level south it is 1½ ft. wide, worth 5*l.* per fm. There is no change to notice in the 220 north since the meeting; in the same level south the lode is 3 ft. wide, worth 20*l.* per fm. In the 210 north the lode is 1 ft. wide, producing stones of ore; in the same level south it is 2 ft. wide, worth 4*l.* per fm. In the 200 north the lode is 1½ ft. wide, worth 4*l.* per fm.; in the same level south it is 2 ft. wide, worth 5*l.* per fm. In the 190 north the lode is 2 ft. wide, worth 4*l.* per fm. In the 180 north the lode is 2½ ft. wide, producing good stones of ore. The stopes and pitches are producing much as usual. We have this day sold two parcels of silver-lead ore—No. 1, computed 58 tons, to Messrs. Sheldon, Bush, and P. S. Co., at 24*l.* 1s. per ton; and No. 2, computed 54 tons, to the Burry Port Smelting Company, at 16*l.* 9s. 6d. per ton.

WHEAL SPARNON.—Wm. Tregay, Dec. 19: The influx of water has been so great this week as to drive us out of the 30 cross-cut. The men have been engaged taking up all the water possible at the adit level, there being more water here than has been known for many years.

WYE.—John Pauli, Dec. 19: Murchison's shaft is now down 8 fathoms from surface, and the ground still favourable for sinking. In the adit level, driving west, there is no change in the lode since last report. On account of water we are obliged to forego the trial shaft alluded to in a former report, until the water-wheel is erected, when a light line of rods can be attached to it for pumping purposes. The different surface works, such as excavating wheel-pit, making water-course and road, building smithy, &c., are being pushed forward as fast as possible.

FOREIGN MINES

ST. JOHN DEL REY.—Morro Velho produce for October, 8346 oits.; from 4815 tons of ore, yield 1·716 oits. per ton. Morro Velho cost for October, 5092*l.*; loss for ditto, 1858*l.* Morro Velho produce 12 days of November, 2585 oits., yield 1·324 oits. per ton. Gaia produce for October, 1443 oits., from 845 tons ore yield 1·713 oits. per ton. Gaia cost for October, 490*l.* Gaia profit for ditto, 129*l.* Gaia produce 12 days of November, 536 oits.; yield, 1·562 oits. per ton.

DON PEDRO.—Produce for October, 22,314 oits., at 8s. 6d. per oit., 9483*l.*; cost, 2294*l.*; profit, 7189*l.* The results for the month are highly pleasing, as both produce and profit exceed those for last month. The profit of 7189*l.* sterling is the highest we have yet had for the year, and the produce of 22,314 oits. has again satisfactorily demonstrated the richness of the curve, or No. 5. The explorations have been carried on regularly, but no auriferous ground encountered; no effort is being spared to attain this desirable object. At Tambor the underlie, dip, and direction of the lode is precisely similar to that at Maquine, but as yet no gold has been met with.—First division of November: Produce, cleaned up to date, amounts to 6031 oits. Good duty is being done, notwithstanding the attendance of force being affected by an unusually heavy sick list. The features in the mine continue most favourable, though no box-work has been taken out since my last. There is nothing new to report in the exploratory works. All are manned.

ANGLO-BRAZILIAN.—Produce for October, 3875 oits., at 9s., 1743*l.*; cost, 1708*l.*: profit, 35*l.* The proceedings and results of the month have been satisfactory. I have the pleasure of reporting a produce of 3875 oits., being the highest for the year, and 487 oits. in excess of that for last month. The profit, however, is not quite so favourable as we could have wished; still, saving the high cost consequent upon a rise in the exchange, free pay for five weeks, and the exorbitant prices paid for provisions, it should not be considered unsatisfactory. In the features of the lodes little or no change has taken place, save in Dawson's and Haymen's shafts. At the former the yield of the stone has improved from 3·64 oits. to 4·08 oits. per ton, or 12 per cent., and at the latter from 2·25 oits. to 2·62 oits. per ton, or 16·44 per cent.—Mine: The attendance of force having been better than in September, the operations at the various sections have proceeded with greater regularity, and the amount of duty has consequently been more satisfactory.

TAQUARIL.—The following has been addressed by Mr. Henry Haymen, the Chairman, to the shareholders:—"Herewith I beg to hand you an extract from a letter which Mr. Walter Tregellas states that he has received by the mail just to hand from Capt. Henry Pengilly, the captain of the Taquaril Mine. I have no reason whatever to doubt Mr. Tregellas's statement, and, therefore, upon mature consideration think it right to put you in possession of the information contained in the letter referred to, although at the same time I am bound to inform you that no official intimation on the subject has been received by the board. Presuming that the information is correct, it would certainly have been more satisfactory (the shareholders being entitled to the earliest intimation of all that relates to their property) had some reference to a circumstance of such importance been officially communicated to the board, news being first received through a private source at all times reflecting discredit on the management. As soon as Capt. Thomas Treloar (who has been appointed consulting engineer) assumes the management the fullest information will be printed and forwarded to the shareholders—a report for the month on the arrival of the French steamer about the 20th, the news by the English steamer about the 2d being, by the courtesy of the various editors, inserted in the newspapers.—HENRY HAYMEN."

Extract from letter from Capt. Henry Pengilly, dated Nov. 12:—"The mining work here is going on with all speed. Deep adit, shallow adit, engine-shaft, and little shaft all in pretty favourable ground. The deep adit has been the most troublesome, several hard and large rocks have been met with, but getting clear of them now. The vein from the shoot at the little shaft produced a few particles of gold yesterday. Dr. Birt saw the first sample, but the second was better than the first. I expect to meet a bunch by-and-bye."

ROSSA GRANDE.—The produce for October amounts to 814 oits. of gold. The operations have proceeded regularly, and, considering our moderate force, good duty has been performed. Since my last, I am pleased to say, the features of the mine are more promising, and the appearance of the lode is more encouraging. In the beginning part of the month we intercepted in the shafts a strong lode of a good size, which to all appearance promises to be of more constancy than any lode yet discovered. The ore extracted and treated during the month amounts to 209 tons, of which the Albert stamping mill crushed 106 tons, yielding 602 oits., and the Alexandra stamping mill 103 tons, yielding 212 oits. The latter is crushing the finer and softer part of the lode, which is inferior in quality.—First division of November: I am much pleased to say that force is coming in more freely, and the operations are proceeding more speedily. Since my last very little alteration has taken place in the size and appearance of the lode at the different points of progress to call for any special notice. A little improvement is perceptible in the auriferous quality of the stone.

SAO VICENTE.—At No. 1 level west the lode continues to open out favourably, but the stone at present is poor. At No. 2 level west there is no alteration in the appearance of the lode since last reported on.—Jacotinga Formation: At the Canoa the progress has been very slow, owing to our being deprived this week of the services of our carpenter, through family affliction.

CAPE COPPER.—J. Williams, Nov. 6: The engine-shaft has been sunk 3 ft. 4 in.; we had considerable hindrance, owing to the increase of water from the 20, west and north, in the 30, driving south-west, and also from the parting of the joints in the sinking lift. There is not any material change in the ground to notice; we have 5 fathoms more to sink to reach the 40, and have thought it advisable to set the whole lift at 45*l.* per fathom, to complete it to that point. The 30, driving south-west from the engine-shaft, during the past month has been extended 2 fms. 3 ft. 6 in., in a good course of copper ore that yields from 8 to 10 tons per fathom; re set to three men and three labourers, at 16*l.* per fm., for 4 fms., or the month. The 30, north-east from the engine-shaft, has been extended 2 fms. 5 ft. in a rich course of ore, yielding about 6 tons per fathom, and promising to improve; set, Nov. 1, to two men and two labourers, at 11*l.* per fathom. In this level we have set three men and three labourers to sink a winze in a good course of ore that will yield from 6 to 8 tons per fathom, at 15*l.* per fathom, for 4 fathoms, or the month. We have commenced driving the 30 west from No. 3 winze in a splendid course of copper ore that will yield from 18 to 20 tons per fathom; set, Nov. 1, to three men and three labourers, at 25*l.* per fathom, for 3 fathoms, or the month. The 20 west, on the south mineral course, suspended a short time for want of hands, we have set to four men. The ground in this end is very hard, but strongly impregnated with minute particles of copper ore; set, Nov. 1, 1 fathom, or the month, at 30*l.* per fathom. The 20 east has been extended 2 fms. 5 ft. through promising ground, producing good stones of copper ore, but not in sufficient quantity to value; re set to two men and two labourers, at 12*l.* per fathom for 3 fathoms, or the month. The 20, driving north on the flookan course, has been extended in the past month 4 fathoms without any material change to notice. The winze sunk in a north branch of copper ore, to communicate with Kelly's stope, is holed, and will enable us to work this piece of ground to advantage; the depth of the winze is 4 fms. 2 ft. 9 in., and in the first 2 fms. 3 ft. the branch was only 6 or 8 in. wide, but the remaining portion is through a very good course of copper ore. The stopes working in the back of the 20, by four English miners and 24 native labourers, have produced the usual quantity of copper ore during the past month, and are still very productive. The 20, driving south from the east level, has been extended during the past month 1 fm. 3 ft. 5 in. on the eastern flookan course, in hopes of cutting an east and west course that the incline tunnel was sunk on, east of the flookan, where they raised several tons of very rich copper; tools end in 2 or 3 fathoms more driving will prove if this course will hold good to the 20 fathom level. Re-set to one man and one labourer, at 12*l.* per fathom, for 2 fathoms, or the month. I am pleased to remark that all the labourers, both underground and at surface, have been working very regular during the past month, and have given satisfaction. October extracts, 591 tons of 21 cwts., or 526 tons of 2240 lbs.; average per cent. 33½.

RHENISH CONSOLS.—G. Sweet, Dec. 17: Christiana: The drivage east in the 20 lachter level is a little improved since last reported on.—Bilebach: The drivage west on the middle lode, in the 14 lachter level, has not been so good this week as when last reported, but the present end is showing signs of improvement. No alteration in the stopes and tribute bargains since my last report. We have now a good supply of top water for pumping purposes.

PESTARENA.—T. Roberts, Dec. 15: Since last week the stopes in the back of the 46, at Peschiera, have improved, worth now 5 ozs. of gold per fm.—Acquavite: The lode in the end of the 23 south has widened out to 3 ft., yielding 4 ozs. of gold per fathom; this end is going forth in ground that bids fair for a yet further improvement. No change in any other part of the mines.—Val Toppa: The new, or flat lode, in the end driving south from the first cross-cut, is 3 ft. wide, and in the end north 6 ft. wide. The lode in the end driving north from the second cross-cut has divided into two parts; the western part is 2 ft. wide, and the eastern part 4 ft. wide. We shall communicate this level to a winze sunk from the Marmo Rosso level on the western or flat part of the lode this week. The lode in the end, driving south from this cross-cut, is 2 feet wide; the ore from this end is apparently richer than ever it has been before. We shall make a separate trial of it soon.

GONNESA.—R. W. Rickard, Dec. 7: San Giovanni Mine: The 30 metre level, west from Caroline's shaft, is in hard ground; the lode is wide, and contains spots of ore, but or no value. The same level, east of shaft, is in very kindly ground, and an improvement is shortly expected; the lode now contains good stones of ore. This level, driving from a winze in the eastern part of the mine, is in a very good lode, that yields 3½ tons of ore per fathom. Taylor's level is being driven west by six men. The lode in the end of this level is 6 ft. wide; for the last 6 metres it has yielded about 1½ ton of ore per fm.; now, however, it is almost unproductive. The western end of Taylor's level is in promising ground, but at present unproductive. Victor Emanuel level is being driven west by six men; the lode in the end of it is about 3 ft. wide, unproductive. We have set a pare of men to drive a level about 25 metres above Victor Emanuel level, from the end of a winze, and have met with a good lode, worth 2½ tons of ore per fathom.—San Giovane ddu Mine: Nicolay level west, on No. 2 lode, is being extended by six men; the end is in ground that yields about ¾ ton of ore per fathom. The 30 metre level is being driven west on No. 1 lode, by six men, at 25 frs. per metre. The lode in the end of this level is 2 metres wide, and yields 3 tons of ore per fathom. The same lode, in a winze sinking under this level, yields 1½ ton of ore per fathom.—Monte Cane: The calamine stopes are turning out fair quantities of ore; but owing to the very wet season we have had during November, our roads have permitted us to carry but a very irregular supply to our furnaces at Gonnesa. We have done but very little on our lead lodes for this season.—Acqua Red Mine: We have cut into the lode at the San Georgia level, and find it to be about 2½ metres wide, with a branch of limestone between. We are now driving on the lode preparatory to stoping the back. The upper stopes are turning out a fair quantity of good ore. At Campo Spino we find the calamine to continue in the deep level. We do not know what width the ore is in the end of the level, as we have not yet the eastern wall. I have not seen better ore in the island than is being broken from the end of the level.—Guttura Pala Mine: The deposit of calamine at Garrucclus shaft does not hold down as we expected. In the south end, however, it promises to hold. We have now about 800 tons of first-class calamine ore on the surface of this mine. Our raisings for November were much below our average, on account of the continual rain which hindered considerably the open works on the calamine, and the transport of the same to the furnaces. San Giovaneddu lead mine is looking promising indeed. The ground in the 30 metre level is opening up quite to our expectations. San Giovanni is improving in the ends, but our stopes have fallen off. We shall produce from there 220 to 150 tons per month. About 100 tons from San Giovaneddu.

AUSTRALIAN GOLD.—The imports of Australian gold experienced in October a slight check, having been 791,207*l.*, as compared with 904,741*l.* in October, 1867, and 983,862*l.* in October, 1866. The receipts for the ten months ending October 31 this year show, however, a considerable progress, being valued at 6,027,936*l.*, as compared with 4,768,711*l.* in the corresponding period of 1867, and 5,623,233*l.* in the corresponding period of 1866. The advance made this year is, probably, attributable to the larger deliveries from the New Zealand gold fields. The value of the gold received from Australasia in the ten years ending 1867 inclusive was as follows:—1858, 9,064,763*l.*; 1859, 8,624,566*l.*; 1860, 6,719,000*l.*; 1861, 6,351,225*l.*; 1862, 6,704,753*l.*; 1863, 5,995,368*l.*; 1864, 2,656,971*l.*; 1865, 5,051,170*l.*; 1866, 6,839,674*l.*; and 1867, 5,801,207*l.*

MINING NOTABILIA.

[EXTRACTS FROM OUR CORRESPONDENCE.]

BWLCH CONSOLS.—We have repaired the damage done by the late high winds, and are busy dressing again, and on Monday next, the 28th, we shall sell 42 tons of lead ore, the produce of the month. All our operations are going on regularly.

NEW CONISTON COPPER MINE.—This valuable property, which adjoins the celebrated Coniston Copper Mine, North Lancashire, and which has been in abeyance for a few years, owing to a long and great depression in mining, as in other branches of industry, is, we understand, about to be vigorously resumed by a Manchester company. A large quantity of rich ores was raised from this mine, and as it gives every evidence of containing great deposits of ore—deposits which can be reached by adit levels quickly and cheaply, as well as from cross-cuts in the shaft, which has been sunk to a depth of 120 fms.—handsome returns are confidently looked for.

EAST DYLIFFE.—I think when one fairly contemplates the amount of good that is done for Cardiganshire by fairly selecting mines, that man must be very sceptical who trusts to chance for his remuneration in mining. It does not matter to what part of Cardiganshire you direct attention, you will find it very fully occupied by prosperous mines. Some years ago there were certain cynical people who, when you spoke of the mines of Cardiganshire, always said Yes, we know the Cardiganshire mines are paying well, but those are the Lisburne Mines. All others were admitted very grudgingly, but now that the outside mines exceed in number those of the inner circle, that reason for attributing poverty to Cardiganshire as a mining county is done away with; and, now-a-days, no person is found hardy enough to deny to Cardiganshire its great prosperity as a mining district. I was led to this observation by a contemplation of the East Dyliffe Mines. I believe it is affirmed, on good authority, that these mines are to be opened on the extensive scale they merit; if so, I think they will prove a very remunerative property, and afford a rich reward to the company. These mines are in the same line of lodes as the great Dyliffe, and continue them to the eastward; the lode has proved down to the depth of upwards of 100 fms., and at that depth yields richly. I do not claim any peculiar qualities for the continuation of this rich mining ground, but merely in common with Logyias, Frongoch, or Cwmystwith; but if trials were carried out, they in all probability would lead to great mines. Frongoch is twice as long as it was 20 years ago; so is the Devon Great Consols. All good lodes lengthen in depth, and the exist-

ing great mines are continually lengthening. Every thinking miner will allow that no better selection can be made to the future of mining than extending the operations on good and safe mines. I am convinced that the Dyliffe Mine will prove to the company that the selection has been made on good grounds.

GOLD MINING IN BRAZIL.—The advices by the last mail (published in another column) are of the most satisfactory character. The Don Pedro Company realised a net profit during October of 7189*l.* 6s. 3d., making from January a total of 48,591*l.* 5s. 9d.; deducting the interim dividends already paid out of the year's profits there remains an undivided profit of 18,641*l.* 18s. 8d., so that although the profits of two months, November and December, have to be added to close the financial year already nearly 5s. per share has been accumulated towards the dividend of 6s. per share, which Mr. Haymen, at the last meeting, indicated as the amount that would probable be declared at the next meeting. Dividends of 8s. per share having been paid out of the year's profits a further amount of 6s. per share will make the year's return equal to 100 per cent. upon the paid-up capital. In addition there is a reserve fund of 3500*l.*

CORNWALL HEMATITE COMPANY (Limited).—The first general meeting of shareholders (a report of which will be found in another column) was held on Tuesday (Mr. William Slater, of Carlisle, in the chair), when the directors' report, which was of a very encouraging character, was unanimously approved and adopted.

LEAD MINING IN MONTGOMERYSHIRE.—At the Mid-Wales Mine all operations are progressing rapidly and satisfactorily. The lode in the deep adit, driving west, is very kindly in its character, and as the end is letting out a considerable quantity of water the manager is daily expecting to reach the deposit of ore seen in the shaft sinking from the summit of the mountain. At Brynpostig there is nothing new to report, except that the general prospects continue of a favourable character, and at Capel Banhaglog no alteration has taken place since the last report.

PROSPER UNITED.—The late and continued great rise in the price of tin is of much importance to these mines, and confirms the accuracy of the decision of the shareholders at the late meeting to carry on the operations vigorously.

CWM DARREN.—The development of the Cwm Darren Mine continues to progress as favourably as the most sanguine investor can possibly desire—in fact it is more than realising the prospects held out at the formation of the company. Operations at the mine have been carried on for about three months only, yet, as will be seen by the report furnished, sufficient silver-lead ore has already been raised to dress a parcel for the market. We are happy to state, judging from the position of the property, that it bids fair to rival its most wealthy neighbours, and add to the list of companies formed for legitimate mining enterprise.

TIN MINING IN CORNWALL—THE GREAT WESTERN MINES.—As will be seen by our advertising columns, nearly 5500 of the 6000 shares into which the company is divided have been subscribed for, and that the list for applications will be closed during the ensuing week. It is understood that among the shareholders are some of the leading tin smelters in Cornwall. The returns of mineral for the present month are expected to leave a satisfactory profit, which it need hardly be said will be materially increased by the recent important advance in the price of tin.

CAPE COPPER MINING COMPANY.—At the meeting, to be held on Wednesday next, the accounts for the year 1867 will be presented, showing a profit of 24,650*l.* 16s. 11d., against 2831*l.* 2s. 5d. for 1866; and the directors, in their report, congratulate the shareholders on the realisation of those results which they had been led to anticipate from the improved condition of the mine due to the operations undertaken in 1866. The discoveries during 1867 exceeded the extraction, thus increasing the reserves. The yield for 1867 was equal to 1413 tons of fine copper, showing an increase of 344 tons as compared with the previous year. A statement of costs and returns for the first ten months of 1868, being up to the date of the last advices received, shows that the position of the undertaking continues to improve—the comparison for the company's freehold mine of Ooklep showing in the first ten months of 1867 returns equal to 1219 tons of fine copper, at a mining cost of 20,653*l.*; whilst in the first ten months of the present year the returns were equal to 1516 tons of fine copper, at a mining cost of 18,406*l.* The Spectakel Mine, reported last year as closed, has been re-opened, and is yielding an increasing moderate return of rich ore. The lease of this mine, together with one for an adjoining piece of land, has now been renewed for 30 years, and the operations will be carried on with increased activity, and a good profit from it for some years to come is relied upon. The directors consider that the increased yield of the mines necessitates a great improvement in the means of transport, and they have, therefore, determined upon the construction of a tramway to be worked by mule traction over the first 40 miles from the sea coast. The directors have again dispatched Mr. Hall to complete the surveys, and to superintend the construction of the tramway. He sailed from England on Oct. 9, and the last mail brought the news of his arrival in the colony. Instructions have been given to the superintendent to assist him in procuring from Government, without delay, the necessary power, and it is hoped that this will be soon obtained. It is expected, therefore, that the company will shortly be placed in such a position as to be independent of the climatic influences which now so grievously retard the transport of their ores to the coast, and that they will reap the full benefit of the exceptionally low rate at which they are enabled to raise their produce—a rate scarcely equalled by any other mine in the world.

THE HINDLEY GREEN COLLIERY EXPLOSION—OPINION OF THE JURY AS TO THE CAUSE.—The Coroner and jury assembled on Monday, for the purpose of signing the inquisitions, when the proceedings closed. Many of the jurymen have, through the foreman, requested the publication of a document, of which the following is a copy, containing their opinion as to the probable cause of the explosion. The remarks could not be officially appended to the verdict, although prepared at the time, but they will be read with interest, as expressing the opinion of men fully acquainted with the working of collieries, and the circumstances attending the explosion:—

"During this painful enquiry the jury have been ably assisted by the Government Inspectors, Messrs. Higson and Dickinson, and by the other witnesses practically acquainted with mining matters. The few remarks we wish to make as to the probable cause of the accident are, of course, merely conjectures, and as such we wish them to be taken. It is evident that in a seam like this, where gas is at times freely generated, the occurrence may have been brought about in various ways.—1st. By damage to lamps from falls of roof or coal, or by the accidental piercing of the gauze by the points of workmen's picks.—2d. By the wilful or accidental ignition of powder stored in bags, cans, or bottles, or by the ineffectual firing of shots, whereby flame might be produced and come in contact with the gas accumulated in the working places.—3d. By the re-lighting of extinguished lamps in unsafe or insecure places, where gas prevailed.—4th. By men or boys tampering with lamps.—5th. By the reckless use of paper or matches. Several of these practices are strictly forbidden by the rules of the company, and we would advise severe punishment in case any offenders are discovered." In conclusion, the jurymen express their satisfaction as to the conduct of the proprietors in managing the mine, and their hope that there will be a liberal response to the appeal for subscriptions.

FOR SALE, AT GRAMBLER AND ST. AUBYN MINES, ONE 60-in. cylinder PUMPING ENGINE, 10 ft. stroke in cylinder, and 9 ft. in shaft, with BOILER, about 14 tons; ONE 18½ in. cylinder WINDING ENGINE, 4 ft. stroke, fly-wheel and cage, with BOILER, about 7 tons. Apply to Mr. F. W. DABB, Redruth.

NICKEL AND COBALT REFINING, AND GERMAN SILVER WORKS, 16, OOZELL STREET NORTH, BIRMINGHAM. STEPHEN BARKER begs to inform the Trade that he has the following articles for sale:—REFINED METALLIC NICKEL. REFINED METALLIC BISMUTH. OXIDE OF COBALT. GERMAN SILVER—IN INGOTS, SHEET, WIRE, &c. NICKEL AND COBALT ORES PURCHASED.

GOLDENHILL, COBALT, NICKEL, COLOUR, BORAX AND CHEMICAL WORKS, NEAR STOKE-UPON-TRENT, STAFFORDSHIRE. JOHN HENSHALL WILLIAMSON, MANUFACTURER AND REFINER, Purchaser of Borate of Lime and Tincal.

Just published, price 1s., by post 1s. 1d., THE SLATE TRADE IN NORTH WALES. By JOSEPH KELLOW, QUARRY ENGINEER (25 years of practical experience), Being a reprint of a series of Letters on the above subject, published in the MINING JOURNAL. London: MINING JOURNAL Office, 26, Fleet-street, E.C.

Now ready, THE THIRD EDITION, SEVENTH THOUSAND, HOPTON'S "CONVERSATIONS ON MINES," BETWEEN A "FATHER AND SON." Revised, improved, and enlarged. Price 2s. 6d., or 33 stamps, free by post. London: MINING JOURNAL Office, 26, Fleet-street.

*** With last week's Journal a SUPPLEMENTAL SHEET was given, which contains—South Wales Institute of Engineers: report of meeting, papers read, and discussion thereon—Manufacture of White Lead Direct from the Ore—Rock-Boring Machines—Royal School of Mines: Mr. Warington Smyth's Lectures (*continued*)—Geological Society of London—Elements of Modern Chemistry—Post Office London Directory—Manufacture of Watches and—Clocks—Extracting Gold from Sulphurets—Nevada Silver Mines, &c.

The Mining Market; Prices of Metals, Ores, &c.

METAL MARKET—LONDON, DEC. 24, 1868.

COPPER.	£ s. d.	£ s. d.
Best selected..p. ton	78 10 0	79 10 0
Tough cake and tile	77 10 0	78 0 0
Sheathing & sheets.	81 10 0	—
Bolts	81 10 0	82 10 0
Bottoms	84 0 0	86 0 0
Old (Exchange)	67 10 0	—
Burra Burra	83 0 0	—
Wire.....per lb.	0 1 0	0 1 0½
Tubes	0 0 11½	1 0

BRASS.	Per lb.
Sheets .....per lb.	8½d.-9d.
Wire ..... "	8d.- —
Tubes ..... "	10½d.-11d.
Yellow Metal Sheath,p. lb.	7½d.- —
Sheets ..... "	?d.- —

SPELTER.	Per ton.
Foreign on the spot	£20 10 0- —
" to arrive..	20 10 0- 20 12 6

ZINC.	
In sheets .....per.....	£25 0 0- 26 0 0

TIN.	
English blocks	110 0 0
Do., bars (in barrels)	111 0 0
Do., refined	114 0 0
Banca	108 10 0
Straits	£108 0 0-108 10 0

TIN-PLATES.*	Per box.
IC Charcoal, 1st qua.	1 6 0- 1 8 0
IX Ditto, 1st quality	1 12 0- 1 14 0
IC Ditto, 2d quality..	1 5 0- 1 6 0
IX Ditto, 2d quality..	1 11 0- 1 12 0
IC Coke	1 2 6- 1 3 0
IX Ditto	1 8 6- 1 9 0
Canada plates,p.ton	13 10 0- —
Ditto, at works	12 10 0- —

IRON.	Per ton.
Bars Welsh, in London	6 12 6- 6 15 0
Ditto, to arrive	6 10 0- 6 12 6
Nail rods	7 0 0- 7 2 6
" Staffd. in London	7 12 6- 8 10 0
Bars ditto	7 10 0- 9 10 0
Hoops ditto	8 2 6- 9 15 0
Sheets, single	9 2 6-11 0 0
Pig No. 1, in Wales	3 15 0- 4 5 0
Refined metal, ditto..	4 0 0- 5 0 0
Bars, common ditto..	6 0 0- —
Do. mrch. Tyne or Tees	6 10 0- —
Do., railway, in Wales	6 0 0- —
Do., Swed. in London.	10 0 0-10 5 0
To arrive	10 5 0- —
Pig, No. 1, in Clyde..	2 14 0- 2 19 0
Do. f.o.b. Tyne or Tees	2 9 6- —
Do. Nos. 3,4, f.o.b. do.	2 6 6- 2 7 0
Railway chairs	5 10 0- 5 15 0
" spikes	11 0 0-12 0 0
Indian Charcoal Pigs, in London, p. ton..	7 0 0- 7 10 0

STEEL.	Per ton.
Swed., in kegs(rolled)..	— - —
" (hammered)	15 5 0-15 10 0
Ditto, in faggots	16 0 0- —
English, spring	17 0 0-23 0 0
QUICKSILVER (p. bottle)	6 17 0- —

LEAD.	Per ton.
English Pig, com.	19 0 0- —
Ditto, LB.	19 5 0-19 7 6
Ditto, WB	21 0 0- —
Ditto, sheet	20 0 0- —
Ditto, red lead	21 0 0- —
Ditto, white	27 0 0-30 0 0
Ditto, patent shot	22 0 0-22 10 6
Spanish	18 5 0-18 7 0

* At the works, 1s. to 1s. 6d. per box less.

REMARKS.—We are still able to report that the Metal Market is continuing to progress very favourably, and all appearances indicate that the time of depression and low prices has now passed away, and that we are entering upon a period of activity and vigour in business, and of more remunerative prices for manufacturers. The extent of business transacted during the week has been considerable, and there is now an evident disposition to enter much more largely into transactions than has been the case for a long time past. With this state of feeling prevalent there is little question that, when the year has turned, we shall find that commercial affairs are in vigorous operation; and it is very satisfactory, in thus making our last report of the metal trade during the present year, to find that so thorough and important a change has come over the market, and that we are not now called upon to deplore continued depression, but are enabled to rejoice over marked improvement, and to look forward to still increasing advancement, and to the return of former prosperity. The dispute between Turkey and Greece is still occupying attention, but it is so evident that the position taken by Greece is erroneous and wrong, that she cannot be supported in the attitude she has taken by any of the Great Powers, who appear united in disapproval of her course; and it is to be hoped, therefore, that she will be led to adopt a different course of action, and one more in accordance with international law, before more serious proceedings are taken by Turkey in the matter; the intelligence that a conference is proposed in the matter, in order to prevent a conflict between Turkey and Greece, will be consequently received with satisfaction. In our next we shall present the readers of the *Mining Journal* with our usual Summary of the Metal Trade during the year.

COPPER.—The market has shown a very brisk and lively appearance during the week, and an extensive business has been done at rising prices. The new association of English smelters has announced an advance of 1*l.* 10s. per ton, making tough cake 77*l.* 10s., and best selected 78*l.* 10s. to 79*l.* 10s., since which business has been done in tough ingot at 78*l.* The market still continues very firm, with an evident upward tendency. Sales of Chili bar have been effected at 72*l.* to 72*l.* 10s. cash, and of Wallaroo at 83*l.* 10s. cash.

IRON.—In Staffordshire there is rather a scarcity of orders, and many works are unable to keep in full operation. A falling off at the close of the quarter was generally expected, but it has somewhat damped expectations of a speedy advance in prices, and it is not considered probable that the question will be raised at the Preliminary Meeting of the Ironmasters' Association, to be held on Dec. 31. In Welsh, makers are now chiefly engaged in finishing old contracts, so as to complete the deliveries before the close of the year. The trade continues to be characterised by a tolerable degree of firmness, and as stocks in both makers' and buyers' hands have been considerably reduced as compared with three months ago, there is a prospect of better prices soon prevailing. Opinions are divided as to whether the Quarterly Meeting will decide upon an advance, it being well known that list quotations are not yet obtained for some brands. The export demand keeps without any material change, American houses being the principal purchasers. From several of the continental markets there is a better enquiry, consequent upon the gradual extension of railways. In Swedish iron, as the navigation is now closed, there is not likely to be much demand until the spring. In Scotch pig-iron the market has not been very animated during the week, but towards the close a little better feeling has arisen, and the price has advanced to 53s. 9d. cash.

LEAD.—The market appears rather firmer than it was, with more enquiry. Prices are firm at the quotations.

TIN.—On Monday the smelters of English announced another advance, of 3*l.* per ton, making prices 110*l.* for blocks, 111*l.* for bars, and 114*l.* for refined. The market for Straits has also continued to improve, and business has been done at 108*l.* to 108*l.* 10s. cash. Banca has also been sold at 108*l.* 10s. cash. The market altogether continues to look well, with an evident upward tendency.

SPELTER.—No animation has yet manifested itself in this metal, and though the price for parcels on the spot remains firm little business is done.

TIN-PLATES.—Makers are well supplied with orders, and as the price of tin has so much advanced it is not improbable that an advance in prices may occur.

STEEL.—Foreign has advanced 5s. per ton, in consequence of the close of the navigation in Sweden.

QUICKSILVER.—There is a moderate demand only.

THE COPPER TRADE.—Messrs. Vivian, Younger, and Bond (Dec. 24)—Although, in consequence of Christmas Day intervening, our report embraces only five working days instead of six, the business transacted mounts up to a high figure, comprising in all about 2500 tons of bars, and 150 tons of ingots. The bars were done at 70*l.* to 72*l.* 10s. cash, and 71*l.* to 73*l.* 10s. for arrival and forward delivery. The ingots consisted of 100 tons Urmenita at 76*l.*, and 50 tons Lota at 75*l.* About 1000 tons regulus have been sold at 14s. 3d. per unit, and a cargo of rich ore in Liverpool at 14s. 6d. per unit. On Dec. 21 the smelters finding the demand too strong upon them at 76*l.* for tough, and 78*l.* for best selected, also that bars were advancing, decided to raise their prices to 77*l.* 10s. and 79*l.* 10s. respectively, at which price orders are now being refused. A large business has been done in fine foreign, especially in Wallaroe, which has advanced from 79*l.* 10s. to 83*l.* 10s. cash, while Burra has found buyers at 84*l.*, two months. The market closes with a strong upward tendency.

Messrs. James and Shakspeare:—The demand for all descriptions is exceedingly good, and the sales larger than have been noted for many months past. In ore and regulus about 1500 tons sold at 14s. 3d. per unit, sellers now asking 14s. 6d., and not caring to sell very freely even at that; in bars fully 2500 tons have been cleared off the market from 70*l.* up to 72*l.* 10s. cash, and from 71*l.* to 73*l.* 10s. for arrival and with long prompt, about one-third the quantity being purchased on French account; only about 150 tons ingots were sold, at 75*l.* and 76*l.*, the latter price being paid for the Urmenita brand. The demand continues active, and, owing to the excitement which has prevailed in the market it is difficult to say the exact amount which has changed hands during the last six days. In Australian we estimate sales to have been about 400 tons, from 80*l.* to 83*l.* 10s. cash, and 80*l.* 10s. to 84*l.* 10s. with extended prompts. Large sales of English sorts are also reported, and, although smelters advanced their official rates on Monday last 30s. per ton, they are not ready sellers even at our highest list-rate, and will book no orders for forward deliveries, except at a further rise of 10s. to 20s. per ton.

We have to record another rise of 3*l.* per ton in tin early this week, and a further advance of 1*l.* 10s. in the standard for copper ore on Thursday. The MINING SHARE MARKET has been moderately active for tin and gold mines, but owing to the near approach of the Christmas holidays general business has not been particularly brisk since our last. The chief transactions have been in Drake Walls, Providence Mines, Chiverton, West Chiverton, Chiverton Moor, Great Laxey, North Treskerby, Prince of Wales, Great Retallack, East Grenville, Grenville, New Lovell, Wheal Seton, Wheal Uny, Kitty (St. Agnes), South Condurrow, Tincroft, Chontales, Don Pedro, Taquaril, General Brazilian, &c.

Carn Brea, 22 to 24; Chiverton Valley, 3 to 3¼; Chontales Gold, 2⅜ to 2⅝; Cook's Kitchen, 12½ to 13½; Drake Walls, 18s. to 20s. Great Wheal Vor, 11 to 12, ex div.; at the meeting a dividend of 5s. per share was declared, leaving 2203*l.* in hand. The tin sold during the quarter realised 8889*l.* 6s. 11d., and a profit of 1489*l.* 8s. 1d. On the 22d 53 tons 18 cwts. of tin were sold for 3524*l.* 17s. East Caradons have again declined to 6½, 6¾, and without any change at the mine that we can learn. East Wheal Grenville, 3⅜ to 3½; Frank Mills, 3⅛ to 3⅜; Frontino, 7s. 6d. to 9s. 6d. Marke Valley, 8¾ to 9; Marke's lode, in the 124 west, is worth 2 tons of ore per fathom. Rosedown lode is worth in the aggregate 12 tons of copper ore per fathom. Great Retallacks have been in demand, at 2½ to 3; the mine is improving at two or three points. Penhalls, adjoining Wheal Kitty (St. Agnes), will declare its first dividend at the January meeting, when the profit is estimated at 800*l.* per quarter. The last sale of tin, 17 tons 2 cwt., brought 63*l.* 5s. per ton (1083*l.* 13s. 3d.) at a cost of 700*l.*; East Lovell, 8¾ to 9¼.

Prince of Wales shares have been firmer, up to 29s., but leave off 24s. to 26s.; the 65 east, when first taken down, was worth 25*l.* per fathom, and now 15*l.*; the new south lode, in the 45 west, is worth 7*l.* 10s. per fathom. Great Laxey, 20 to 21; Great North Downs, 35s. to 40s.; Herodsfoot, 43 to 45; New Lovell, 34s. to 36s.; Norty Crofty, 25s. to 27s. 6d.; North Roskear, 9 to 10; North Treskerby, 12s. 6d. to 13s. 6d.; Providence Mines, 33 to 35; Rosewall Hill and Ransom United, 15s. to 20s.; South Condurrow, 15s. to 17s. 6d. At Cape Copper, the report just issued shows a profit of 24,650*l.* for 1867, against 2831*l.* in 1866, and the reserves of the mine have been increased. The yield was equal to 1413 tons of fine copper, being an increase of 344 tons. Tincroft, 16½ to 17½; West Caradon, 3 to 4; West Chiverton, 59 to 61; West Drake Walls, 6s. to 7s.; West Frances, 39 to 41; West Great Work, 2¼ to 2½; Glan Alun, 12s. to 14s.; Wheal Basset, 65 to 70; Don Pedro, 3⅞ to 4⅛; General Brazilian, 7s. to 9s. Taquaril, 8s. 9d. to 10s.; this mine, adjoining St. John del Rey, and once the richest in Brazil, has commenced working, and is now under the management of the directors of Don Pedro North del Rey. Yudanamutana, 1⅞ to 2⅛; West Seton, 185 to 190; Wheal Crebor, 5s. to 7s. 6d.; Wheal Grenville, 32s. 6d. to 35s.; Wheal Kitty (Lelant), 5 to 6; Wheal Kitty (St. Agnes), 3¾ to 4; Wheal Mary Ann, 20 to 21; Wheal Seton, 65 to 70; Wheal Trelawny, 6 to 7; Wheal Uny, 3¾ to 4¼. Great Western, 2¼ to 2½; we understand upwards of 5000 shares have been taken. South Carn Brea, 5s. to 7s. 6d.; the greater part of these have already been taken. Devon Great Consols, 330 to 340.

MINING DIVIDENDS DURING THE YEAR 1868.

Shares.	Mines.	Amount paid.	Dividends.	Present price.
1,024	Devon Great Consols	£1 0 0	£39,936 0 0	£330 340
15,000	Great Laxey	4 0 0	30,000 0 0	20 21
1,800	Minera	25 0 0	27,000 0 0	175
3,000	West Chiverton	10 0 0	24,000 0 0	59 61
512	South Caradon	1 5 0	17,408 0 0	350 370
17,000	Wicklow	2 10 0	9,350 0 0	12 12½
400	West Wheal Seton	47 0 0	9,200 0 0	180 190
358	Dolcoath	128 17 6	8,734 0 0	390 400
5,908	Great Wheal Vor	40 0 0	8,123 10 0	11⅛ 12½
9,000	Marke Valley	4 10 6	7,650 0 0	8¾ 9
1,024	Herodsfoot	8 10 0	6,104 0 0	43 45
6,000	Tincroft	9 0 0	6,000 0 0	16½ 17½
400	Lisburne	18 15 0	5,400 0 0	
300	East Darren	32 0 0	4,200 0 0	
40,000	Mwyndy Iron	3 5 0	4,000 0 0	
128	East Pool	24 5 0	3,840 0 0	
1,024	Wheal Mary Ann	8 0 0	3,584 0 0	20 21
12,800	Prince of Wales	0 12 6	3,200 0 0	24s. 26s.
2,000	Trumpet Consols	11 10 0	3,000 0 0	15 16
3,000	Maes-y-safn	20 0 0	3,000 0 0	
867	Cwm Erfin	7 10 0	2,817 15 0	
2,800	Foxdale	25 0 0	2,800 0 0	
512	Wheal Jane	10 15 0	2,560 0 0	40 45
6,000	South Darren	3 6 6	1,800 0 0	
512	Wheal Basset	5 2 6	1,792 0 0	65 70
4,295	Wheal Kitty (St. Agnes)	5 4 6	1,718 0 0	3¾ 4
1,120	Providence	10 6 7	1,680 0 0	32½ 35
1,000	Bronfloyd	12 0 0	1,500 0 0	
97	Cargoll	15 5 7	1,374 0 0	20
5,094	Bwlch Consols	4 0 0	1,273 10 0	4
937	South Wheal Crofty	24 10 10	1,037 0 0	13 14
4,000	Brookwood	1 11 0	1,000 0 0	
496	South Wheal Frances	18 18 9	992 0 0	14 15
1,906	East Wheal Lovell	3 9 0	958 0 0	8¾ 9¼
396	Wheal Seton	58 10 0	792 0 0	60 65
1,500	Alderley Edge	10 0 0	750 0 0	
280	Derwent	300 0 0	700 0 0	
509	Creegbrawse and Penkevil..		636 5 0	
165	Levant	10 8 1	632 0 0	
2,450	Cook's Kitchen	19 14 9	612 10 0	12½ 13½
80	Wheal Owles	70 0 0	600 0 0	
3,950	Gawton	3 10 6	600 0 0	1 1⅛
6,400	Cashwell	2 10 0	480 0 0	
508	Summer Hill	3 18 6	317 10 0	
256	Cwmystwith	60 0 0	256 0 0	
1,280	Chanticleer	0 7 8	64 0 0	
76,162	Don Pedro North del Rey	0 14 0	49,981 6 3	3⅞ 4⅛
15,000	Cape Copper	7 0 0	18,750 0 0	13
10,000	Pontgibaud	20 0 0	16,000 0 0	10 12
100,000	Port Phillip	1 0 0	6,250 0 0	1¾ 2
35,000	Alamilios	2 0 0	6,125 0 0	1¾ 1¾
25,000	Fortuna	2 0 0	5,625 0 0	1¼ 2
70,000	English and Australian	2 10 0	5,250 0 0	¼ ¾
15,000	Linares	3 0 0	5,000 0 0	2½ 3
13,500	Vancouver Coal	6 0 0	4,130 0 0	8 9
68,000	Kapunda	1 0 0	1,700 0 0	
1,200	Scottish Australian	1 0 0	1,600 0 0	⅞ 1⅛
20,000	Australian	7 7 6	500 0 0	

At Redruth Ticketing, on Thursday, 1703 tons of ore were sold, realising 8689*l.* 19s. 6d. The particulars of the sale were:—Average standard, 98*l.* 16s.; average produce, 8; average price per ton, 5*l.* 2s.; quantity of fine copper, 135 tons 7 cwts. The following are the particulars of the sales during the past month:—

Date.	Tons.	Standard.	Produce.	Per ton.	Per unit.	Ore copper.
Nov. 26	2587	£ 97 6 0	8	£5 1 0	12s. 6½d.	£62 13 0
Dec. 3	2837	102 1 0	6½	3 17 6	11 11	59 13 0
" 10	1703	103 3 0	6½	3 11 0	11 7½	58 2 6
" 17	3038	104 11 0	6½	4 0 6	12 5	62 4 0
" 24	1703	98 16 0	8	5 2 0	12 10	64 4 0

Compared with last week's sale, the advance has been in the standard 1*l.* 10s., and in the price per ton of ore about 2s. 6d. Compared with the corresponding sale of last month, the advance has been in the standard 10s., and in the price per ton of ore 1s.

The Standards of Tin Ores and Prices of Metal were advanced on Monday, and are now as follows:—Ores: Common, 100s.; superior common, 101s.; fine, 102s.; superior fine, 104s.—Metal: Common, 110s.; refined, 114s.

At Great Wheal Vor United Mines meeting, on Wednesday (Mr. George Noakes, F.G.S., in the chair), the accounts showed a credit balance of 3689*l.* 19s. 2d. A dividend of 5s. per share was declared. Details elsewhere.

At Great South Tolgus Mine meeting, on Monday (Mr. W. A. Thomas in the chair), the accounts for September and October showed a debit balance of 67*l.* 0s. 3d. A call of 2s. 6d. per share was made. Capt. John Daw reported upon the various points of operation. "To ease Lyle's engine we have put the Wheal Tehidy engine to work by day for a month or two during the winter; and I have also thought it prudent to suspend operations at and about Noel's shaft for the winter, as in this part we are getting in connection with the elvan."

At the Princess of Wales Mining Company meeting, on Wednesday, it was resolved that the "transfer of 1100 shares from Mr. Samuel Lang to Mr. Samuel Peter be not accepted, and that the secretary be requested to return the transfer to Mr. Lang." A call of 1s. per share was made. Messrs. T. Nicholls,

J. Pearce, W. Rickard, H. Rickard, and Edward Nicolls were appointed the committee of management until the next general meeting.

At East Carn Brea Mine meeting, on Dec. 18 (Mr. R. McCallan in the chair), the accounts for September and October showed a debit balance of 609*l.* 15s. 10d. A call of 3s. 6d. per share was made. Capt. Isaac Richards reported that they hoped to sample during the next two months about 180 tons of copper ore, and about 75 tons of tinstuff.

At Bedford United Mines meeting, on Dec. 17 (Mr. W. A. Thomas in the chair), the accounts for the four months ending October showed a credit balance of 127*l.* 19s. It was estimated that there would be a balance against the mine at the April meeting of 822*l.* 14s. 10d. A call of 4s. per share was made. Capt. James Phillips reported that he was still confident, judging from present appearances, that on the next level being extended some distance east and west the mine would resume paying dividends.

At Hingston Down Consols meeting, on Tuesday (Mr. W. A. Thomas in the chair), the accounts for the three months ending September showed a credit balance of 378*l.* 4s. 6d. The estimate of receipts and expenditure before the April meeting showed a debit balance of 39 . 3s. 9d. A call of 1s. 6d. per share was made. Capt. James Richards reported upon the various points of operation.

At the St. John del Rey Mining Company meeting, on Wednesday (Mr. John Hockin in the chair) the report of the directors was unanimously received and adopted. Details will be found in another column.

At the East del Rey Mining Company meeting, on Tuesday (Mr. F. W. Smith in the chair), the report of the liquidators and balance-sheet were received and adopted. Details in another column.

At the Royal Copper Mines of Cobre special meeting, on Wednesday (Mr. Pascoe C. Glyn in the chair), the report submitted states that the efforts made to raise funds for the purpose of effecting the explorations recommended by Mr. Clemes having failed, Mr. Clemes was dispatched to Cuba on Sept. 2, with instructions to close the company's mining operations, and to realise their assets to the best possible advantage. Mr. Clemes is still engaged in the discharge of those duties, and the board have the fullest confidence in the best efforts of himself, and Don Pedro Ferrer Landa being exerted for the attainment of the important objects of his mission. The Chairman stated that they were met together to pass certain formal resolutions for the winding-up of the company and the appointment of liquidators. The board had given much time and anxious thought to the consideration of what was the best for the company's interests, and they could come to no other conclusion than that their sole course was to propose what was stated in their report. They had, under the advice of their solicitor, proposed that a professional accountant should be appointed one of the liquidators. With respect to the company's affairs in Cuba, he might mention, although referred to in the report, that the board had sent out Mr. Clemes, in whose skill and integrity they had the greatest confidence, to arrange for settlement of matters out there. Mr. Clemes had arrived out, and was doing his utmost to close the works within as short a time as the company's interests would allow. Owing, however, to the disturbances in the island, he was much harrassed and impeded in his movements, and it was impossible to say when his labours would be brought to a close; but everything that was possible he would do. He then moved the adoption of the report, which, being duly seconded, was put and carried unanimously. It was then resolved that the company should be wound-up voluntarily, and Messrs. Palmer and E. Waterhouse (Messrs. Price, Holyland, and Waterhouse) were appointed liquidators for the purpose of winding-up the company and distributing the property. The Chairman stated that the shareholders would have to be called together again to confirm these resolutions, and Jan. 13 had been fixed for that purpose. A vote of thanks to the Chairman closed the proceedings.

COAL MARKET.—The arrivals this week only number 50 ships. The mildness of the weather, and the holidays, has had a depressing effect upon the trade in house coals, but prices have been supported. Hartley's steady, and without alteration in value. Hetton Wallsend, 18s.; Hartlepool Wallsend, 16s. 9d.; Harton Wallsend, 15s. 6d.; Tunstall, 15s. 6d.; Hawthorn Wallsend, 15s.; Pittington Wallsend, 15s. Unsold, 3 cargoes; 110 ships at sea.

The amount of Australian gold now on the way to England is 534,000*l.*, of which about 190,000*l.* is due. The Swiftsure has 129,000*l.*; the True Briton, 105,000*l.*; Yorkshire, 96,500*l.*; Benvenue, 94,500*l.*; Kosciusko, 46,000*l.*; Macduff, 45,500*l.*; and the Lancashire, 17,500*l.*

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TO LET, A VALUABLE COAL MINE.—Apply to Mr. GEORGE DAVIDSON, Mawley, Cleobury Mortimer, Shropshire.—Dec. 12, 1868.

NORTH WHEAL ROBERT MINING COMPANY.—ALL PERSONS having CLAIMS against the above company, are REQUESTED TO SEND in PARTICULARS of the same to me, at 8, Austinfriars, London, forthwith. J. H. MURCHISON, Liquidator.

In the Matter of the Companies Act, 1867,
AND IN THE MATTER OF
THE PORT PHILLIP AND COLONIAL GOLD MINING COMPANY
(LIMITED AND REDUCED).

NOTICE IS HEREBY GIVEN, that a PETITION for CONFIRMING a RESOLUTION reducing the CAPITAL of the above company from £500,000, divided into 100,000 shares of £5 each, to £200,000, divided into 100,000 shares of £2 each, was, on the 17th day of December, 1868, presented to the Lord Chancellor, and is now pending, and that the list of creditors of the company is to be made out as for the 31st day of January, 1869.
YOUNG, MAPLES, TEESDALE, AND NELSON,
No. 6, Frederick's-place, Old Jewry, in the City of London,
Solicitors to the company.

THE SAO VICENTE MINING COMPANY (LIMITED).—Notice is hereby given that after the 30th day of December, 1868, the SHARES of the ABOVE COMPANY will be SUB-DIVIDED into shares of the nominal value of ONE POUND each, instead of FIVE POUNDS as heretofore, and the shares will be re-numbered accordingly, and shareholders are requested to send in their certificates for certification to the secretary at the offices of the company.
The transfer-books will be closed from the 28th day of December, 1868, to the 6th day of January, 1869, inclusive.
HENRY HAYMEN, Chairman.
FRED. W. SMITH, Secretary.
35A, Moorgate-street, London, E.C., 24th December, 1868.

THE COMPANY OF PROPRIETORS OF THE ROYAL COPPER MINES OF COBRE (LIMITED).
Notice is hereby given, that a SPECIAL GENERAL MEETING of the Proprietors of this company will be HELD at the offices of the company, No. 75, Gresham House, Old Broad-street, in the City of London, on WEDNESDAY, the 13th day of January, 1869, at One o'clock in the afternoon precisely, for the purpose of confirming the Resolutions passed by the Special General Meeting of the company, held on the 23d day of December instant, for winding-up the company voluntarily, and appointing Robert Samuel Palmer, Esq., and Edwin Waterhouse, Esq. (of the firm of Price, Holyland, and Waterhouse), liquidators for winding-up the affairs of the company and distributing its property.
P. C. GLYN, WALTER SHAIRP, } Directors of the Company.
75, Gresham House, Old Broad-street, London.
Dated the 24th day of December, 1868.

NOTICE IS HEREBY GIVEN, that an EXTRAORDINARY GENERAL MEETING of the PERUVIAN MINERAL COMPANY will be HELD at 25, Old Jewry, London, E.C., on TUESDAY, the 5th January, 1869, at Two o'clock, to confirm the following resolutions, or otherwise, as then determined:—
"It having been proved to the satisfaction of this company in general meeting assembled that it cannot, by reason of its liabilities, continue its business, and that it is advisable to wind-up the same, and that the same be wound-up voluntarily."
"That Mr. C. Beeden King be appointed voluntary liquidator in an honorary capacity."
By order,
JOHN JAMES HARRIS, Secretary.

NATAL LAND AND COLONIZATION COMPANY (LIMITED).
Notice is hereby given, that the DEBENTURE BONDS of this company, and "COUPONS" due on the 1st January, 1869, will be PAID on or after that date, on presentation at the company's bankers, Messrs. SMITH, PAYNE, and SMITH, Lombard-street. Interest on the said Debenture Bonds will cease from the 1st January.
Any further applications relative to renewals must be addressed to the Secretary.
By order, G. E. BREFFIT, Secretary.
41, Threadneedle-street, London, Dec. 21, 1868.

COLONIAL BANK.—
Subscribed capital £2,000,000
Paid-up capital 500,000
The Court of Directors of the Colonial Bank hereby give notice that, in pursuance of the provisions of the Charter, a HALF-YEARLY GENERAL MEETING of proprietors will be HELD at the London Tavern, Bishopsgate-street Within, on FRIDAY, the 8th of January, 1869, at One o'clock precisely, to receive the report of the proceedings of the corporation, and for the election of five directors and one auditor, in the room of the following gentlemen, who go out by rotation—viz.,
CHARLES CAVE, Esq., JAMES FLETCHER, Esq., EDEN COLVILE, Esq., WM. DAVIDSON, Esq., WM. BURNLEY HUME, Esq., } Directors,
EDWARD MILLER, Esq., Auditor,
Who, being eligible, offer themselves for re-election.
The Transfer-books of the corporation will be closed on the 28th inst., and be reopened on the 15th January, 1869.
By order of the Court of Directors,
C. A. CALVERT, Secretary.
No. 13, Bishopsgate-street Within, 18th December, 1868.

STANNARIES' LAW AMENDMENT.
AT a MEETING held at REDRUTH, on Thursday, the 10th of December, 1868, for the purpose of considering the PRESENT POSITION of the LAW AFFECTING MINES in the STANNARIES of DEVON and CORNWALL,—
THOS. S. BOLITHO, Esq., in the chair.
It was moved by R. DAVEY, Esq., and seconded by R. R. MICHELL, Esq., and resolved,—
"That in the opinion of this meeting the law at present applicable to the Cost-book System requires amendment."
It was moved by Major BICKFORD, and seconded by S. H. JAMES, Esq., and resolved,—
"That a committee be appointed for the purpose of ascertaining the details in which amendment is required, and that it be requested to report to a general meeting as early in January next as may be convenient, with the view of embodying any suggested amendments in a Bill to be laid before Parliament in the ensuing Session, such committee to consist of the twenty-six gentlemen following, with power to add to their number:—

Sir W. WILLIAMS, Bart.	Mr. T. S. BOLITHO.
Mr. WILLIAM SHILSON.	Mr. S. H. JAMES.
Mr. R. TAYLOR.	Mr. R. R. MICHELL.
Mr. MORRIS, Tavistock.	Mr. RAWLINGS.
Mr. WILLIAMS, Charlestown.	Mr. H. GRYLLS.
Mr. W. H. TREGONING, Truro.	Mr. M. G. PEARCE.
Capt. W. TEAGUE.	Mr. CHILDS, Liskeard.
Major BICKFORD.	Mr. SMITH, Truro.
Mr. ROGERS, Helston.	Mr. DOWNING, Redruth.
Mr. CORNISH, Penzance.	Mr. HIGGS.
Mr. MARRACK.	Mr. ARTHUR WILLYAMS.
Mr. HILL.	Mr. R. H. PIKE.
Mr. BOYNS.	Mr. WM. HARVEY."

It was moved by J. T. H. PETER, Esq., and seconded by W. SHILSON, Esq., and resolved,—
"That the Vice-Warden and Officers of the Stannaries Court be respectfully requested to make any suggestion to the committee which they may think necessary for increasing the efficiency of that Court, and that they be further respectfully invited to confer with the committee on the subject."
It was resolved,—"That the members of Parliament for the county and boroughs in Cornwall be requested to act on the committee."
Resolved,—"That Mr. Thomas Cornish be the secretary of the committee."
THOS. S. BOLITHO.
Resolved,—"That the best thanks of the meeting be given to the Chairman for his conduct in the chair."
THOS. CORNISH, Secretary.

STANNARIES' LAW AMENDMENT.
AT the FIRST MEETING of the COMMITTEE, held at the ROYAL HOTEL, TRURO, on Monday, the 14th day of December, 1868, present—
THOMAS S. BOLITHO, Esq., in the chair.
JOHN ST. AUBYN, Esq., M.P., and Messrs. W. SHILSON, HY. GRYLLS, S. T. G. DOWNING, R. R. MICHELL, F. HILL, A. WILLYAMS, W. TEAGUE, R. H. PIKE, S. H. JAMES, W. J RAWLINGS, T. CORNISH, S. HIGGS, H. ROGERS, R. MARRACK, CHRISTOPHER CHILDS, WILLIAMS, W. HARVEY, P. P. SMITH.
Letters were read from Messrs. A. Pendarves Vivian, M.P., Richard Boyns, and Major Bickford, regretting inability to attend.
It was resolved,—"That Messrs. Deeble Bigger, T. P. Tyacke, and R. W. Childs be requested to act on this committee."
It was resolved,—"That the resolutions of the public meeting be advertised in the county papers once, and in the Plymouth papers twice."
Resolved,—"That in the opinion of this committee it is expedient that at every meeting of adventurers specially convened for the purpose, a majority in value of the adventurers present or represented by proxy, shall have power to audit accounts and make calls."
Resolved,—"That in the opinion of this committee it is expedient that there shall be given to cost book companies powers similar to those contained in the various Joint Stock Companies Acts for the purpose of recovering calls and forfeiting shares."
Resolved,—"That in the opinion of this committee it is expedient that any meeting having power to make calls shall have power of making calls to meet prospective cost not exceeding the estimated expenditure of the ensuing three months."
Resolved,—"That in the opinion of this committee it is expedient that at any meeting specially convened for the purpose, it shall be lawful for not less than two-thirds in value of the whole of the adventurers to sell the setts and plant as a going concern, reserving grantors' rights."
Resolved,—"That in the opinion of this committee it is expedient that the labourers' wages shall have precedency over all claims on the materials and assets."
Resolved,—"That in the opinion of this committee it is expedient that in winding-up suits no past shareholder shall be called upon to contribute to the assets of the company who has *bona fide* transferred his shares two years or upwards before the commencement of the winding-up."
Resolved,—"That in the opinion of this committee it is expedient that relinquishments shall operate as transfers to the purser in trust for, and to place the shares at the disposal of the shareholders."
Resolved,—"That the secretary be requested to forward a copy of these resolutions to the Vice-Warden of the Stannaries, and respectfully to request him to state his views on them as soon as he conveniently can."
And resolved,—"That the Chairman and Messrs. St. Aubyn, M.P., W. J. Rawlings, and the professional men on the committee, be a sub-committee to meet and confer with the officers of the court. And that the sub-committee have authority thereafter to take such further steps as they may think necessary."
THOMAS S. BOLITHO, Chairman.
And resolved,—"That the thanks of this committee be given to Thomas Simon Bolitho, Esq., for his conduct in the chair."
THOS. CORNISH, Secretary.

MR. THOMAS THOMAS,
ASSAYER, &c.,
COPPER ORE WHARVES, SWANSEA.

LEAD ORES.

Date.	Mines.	Tons.	Price per ton.	Purchasers.
Dec. 18	Great Laxey	100	£22 12 6	Sheldon, Bush, & Co.
—	Powell United	25	11 15 0	Sims. Willyams, & Co.
22	Caldbeck Fells	15½	13 15 0	Walker, Parker, & Co.
—	ditto	8	8 13 0	P. Glover.
24	Wheal Mary Ann	58	24 1 0	Sheldon, Bush, & Co.
—	ditto	54	16 9 6	Burry Port Co.

BLACK TIN.

Date.	Mine.	Tons. c. q. lbs.	Price p. ton.	Amount.	Purchasers.
Dec. 18	South Condurrow	4 4 2 27	£62 12 6	£ 265 7 0	—
19	Prosper United	8 4 3 12	60 15 0	500 15 0	Trerife.
—	ditto	2 3 1 4	51 0 0	110 7 6	ditto
—	Kitty (St. Agnes)	6 5 3 3	61 5 0	385 3 9	—
—	Penhalls	17 2 2 18	63 5 0	1083 13 3	—
22	Great Wheal Vor	53 18 0 24	—	3524 17 1	—

COPPER ORES.

Date.	Mines.	Tons.	Price per ton.	Purchasers.
Dec. 22	Caldbeck Fells	9½	£18 14 6	J. Bibby Sons & Co.
—	ditto	15¾	10 3 0	ditto

BLENDE.—Cargoll Mines sold on Dec. 18, to Vivian and Sons, 200 tons, realising 700*l.*; and have for sale, on Thursday, 80 tons of best quality lead ore.

COPPER ORES.
Sampled Dec. 9, and sold at Tabb's Hotel, Redruth, Dec. 24.

Mines.	Tons.	Price.	Mines.	Tons.	Price.
South Caradon	72	£7 8 6	Clifford Amalgamated	50	£2 15 6
ditto	71	6 7 6	ditto	16	3 10 6
ditto	67	10 17 0	West Wheal Damsel	47	3 12 0
ditto	61	4 0 0	ditto	44	3 8 6
ditto	60	10 15 0	ditto	42	3 12 6
ditto	59	5 0 0	ditto	41	3 16 0
ditto	53	10 5 0	ditto	34	3 14 6
ditto	52	4 9 6	ditto	26	5 15 0
Great North Downs	79	5 4 6	Phœnix Mines	74	3 13 0
ditto	76	4 10 6	ditto	65	3 18 0
ditto	75	5 18 6	ditto	58	6 12 6
ditto	70	4 18 6	Craddock Moor	55	4 8 0
ditto	60	4 3 0	Pennance	22	2 11 0
Clifford Amalgamated	104	4 15 0	ditto	15	6 10 0
ditto	83	2 9 0	Grambler & St. Aubyn	4	4 6 6
ditto	68	1 10 6			

TOTAL PRODUCE.

South Caradon	495	£3674 2 6	Phœnix Mines	197	£ 907 17 0
Great No. Downs	360	1794 16 0	Craddock Moor	55	242 0 0
Clifford Amalgam	321	996 4 0	Pennance	37	153 12 0
West Wh. Damsel	234	904 2 0	Grambler, &c.	4	17 6 0

Average standard ..... £ 98 16 0 | Average produce 8
Average price per ton £5 2 0
Quantity of ore ..... 1703 tons | Quantity of fine copper .. 135 tons 7 cwts.
Amount of money £8689 19 6

COMPANIES BY WHOM THE ORES WERE PURCHASED.

Names.	Tons.	Amount.
Vivian and Sons	347½	£1267 16 6
Freeman and Co.	90½	799 17 10
Grenfell and Sons	230½	1449 9 6
Sims, Willyams, and Co.	186	1329 14 6
Williams, Foster, and Co.	203½	962 5 4
Mason and Elkington	267½	1192 14 0
Copper Miners' Company	61	244 0 0
Newton, Keates, & Co.	56½	262 1 10
Sweetland, Tuttle, and Co.	260½	1182 0 0
Total	1703	£ 8689 19 6

Copper ores for sale at Tabb's Hotel, Redruth, on Thursday next—Mines and Parcels.—West Seton 566—Clifford Amalgamated 371—East Pool 168—South Crofty 136—South Frances 91—North Grambler 63—Carn Camborne 35—North Crofty 19—Pendarves United 4.—Total, 1453 tons.

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London: LONGMANS, GREEN, and Co., Paternoster-row.

On Friday next,
THE QUARTERLY JOURNAL OF SCIENCE.
No. XXI, January, 1869. Price 5s.
I.—The Ethereal Hypothesis of Light. With chromo-lithograph and three woodcuts. By JAMES SAMUELSON, Editor.
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The work will embrace explanatory notes, definitions, and illustrations of mining terms—such as shaft, level, cross-cut, sink, stope, end, rise, pitch, &c.
The work will contain upwards of fifty maps, plans, and sections.
Price, 10s.; by post, 10s. 6d.

Notices to Correspondents.

*** Much inconvenience having arisen in consequence of several of the Numbers during the past year being out of print, we recommend that the Journal should be *filed* on receipt: it then forms an accumulating useful work of reference.

TIN-PLATES, AND SCHWARZBLECH—"J. S. and Co." (Sheffield).—The price of tin-plates has been published weekly in the Journal during the period mentioned. The quotation for sheet-iron has also been given, but the description known in Germany as Schwarzblech is not generally quoted in this country. There is import duty on tin-plates. The information sought is generally of a purely trade character, which those in the trade would be unlikely to publish without careful consideration.

GREENWELL'S MINE ENGINEERING.—"W. H." (Sweden).—This thoroughly practical and important work on Mine Engineering will shortly be re-issued, it having been revised by the author, and the subject matter brought down to the present day. It will be published in monthly parts, at 2s. 6d. each, and completed in about sixteen months.

NEW SYSTEM OF IRON AND STEEL MAKING.—The papers on this subject, by Messrs. G. J. and T. C. Hinde, will be resumed in next week's Journal.

SCALE FOR ADVERTISEMENTS.—To avoid the necessity of frequent application we may state our charge for general advertisements is—for six lines and under, 4s.; per line afterwards, 8d. Average, twelve words per line.

THE MINING JOURNAL,
Railway and Commercial Gazette.

LONDON, DECEMBER 26, 1868.

OUR AMERICAN TRADE.

We have from time to time referred to the changes which impend and have taken place in those commercial tariffs by which the mining and the useful metal interests of Great Britain are affected, and we shall continue to notice further contemplated or achieved alterations. In the Journal of Sept. 12 we sketched the measures, as then known, by which it was understood certain of the United States legislators would endeavour to raise the duties upon iron and steel and other metals, which are chiefly imported into that country from our own works. The Bill is at present in the hands of the Ways and Means Committee; but so anxious are private members even to protect the interests with which they are associated that, not content to wait the introduction of the comprehensive measure just spoken of, they avail themselves of the very first sitting of the Congress, which will close President JOHNSON'S term of office, by bringing on a Copper Tariff Bill. This was on the 7th inst., and, as was to have been expected, the step was objected to by the Ways and Means Committee. Nevertheless, on the following day the Bill was called up by the Speaker. What then took place has been thus summarised:—

"Several objections were made to its consideration, but they were all overruled, and the Bill was forced through the House under the operation of the previous question, and passed by a vote of 107 to 51. In the form in which it was passed it relates only to imported copper, and provides that the following increased duties shall be levied from and after its passage:—On all copper ore imported 3c. a pound for each pound of fine copper contained therein; on all regulus of copper and all black or coarse copper 4c. for each pound of fine copper; on old copper 4c. a pound; on copper plates, bars, ingots, pigs, and other forms manufactured 5c. a pound. This Bill now goes to the Senate, where it will probably lie on the table until the General Tariff Bill promised by the Committee of Ways and Means comes from the House."

A jaunty writer, in sketching the same piece of American legislation, supplies us with the following:—

"The members went to work to-day (Dec. 8) in a business-like way, but I cannot applaud all their achievements. In the first place, they put through, under whip and spur, the "Copper Tariff Bill"—a measure which adds, I believe, 3 cents per lb. to the duties on foreign copper. This is all very well for the Wall-street men, who have invested in the Michigan copper mines and stocks, but it is a terrific blow to the languishing ship-building interest of the United States; and it might be well for those who complain of the havoc wrought by the Alabama, to ask themselves the effect of such tariff duties in banishing the American flag from the high seas. Far down, many a fathom deep, lies the Alabama; but, while the copper protectionists flourish and bear rule, Admiral SEMMES may boast that his allies do not the work negligently."

There is, we fear, too much reason to entertain apprehension that the present protectionist efforts will be successful. President JOHNSON'S message shows the finances of the country to be in a position far other than satisfactory, and points to the necessity for even greater taxation than now prevails, so that in monetary matters the Republic may be kept from drifting very far to leeward. Like railway companies, who meet financial difficulties by raising fares, which may reduce the number of passengers, so a nation, partially educated upon the true principles of commercial success, as the Americans are well known to be, are almost sure to look to the raising of more money first at the cost, as they would imagine, of foreigners, in increasing foreign tariffs, and then in raising the existing scale of internal taxation. There is another reason why an effort will be made to put up the tariff just now. Not a few American manufacturerers of metal goods find themselves much less able now than they were some time ago, to compete with British makers. This has been brought about by the higher prices demanded for their labour by the American artizans. In consequence of being compelled to accede to higher terms, the American manufacturer is here and there being beaten by his British competitor out of markets which he had sometime ago almost entirely wrested from him. A wonderful change is on this account now to be seen in the markets of Australia, New Zealand, and even California. A great effort will, therefore, be made by the manufacturers who find themselves losing ground, with a view to regain their lost position. And they must make that effort at once, or so far as their interests are concerned the legislation will not be effected. This the fortieth Congress, is their chance. In the next the majority is almost certain to be against them. They must, therefore, do their work this winter, or not at all. The vigour with which they have began it we have already shown. In the existing House, however, the struggle will be severe, for the Western States, who chiefly have to pay the piper, are getting ready with quite as much earnestness to oppose any further increase in the tariff.

It is somewhat curious to observe the means which some of the American ironmasters, for instance, are adopting with a view to meet one feature of the competition which they are experiencing. The point was incidentally noticed in the *Mining Journal* on Nov. 23 last year, in our article upon "Iron in America and England." It was there shown that it was claimed for the Americans that they were beating the English ironmasters by introducing "a machine called a squeezer," which required "no manual labour, and which did the work of our steam-hammer, which, on the contrary, required the attention of two men." At the last sitting of the Trades Union Commissioners Mr. NASMYTH, in reply to one of the questions put to him, said—

"I was some years ago at a certain iron works in Wales, where I saw the machine used called the Squeezer, and I put it to the gentleman that managed the works, 'That is a bad way of making iron, to put the puddle-balls into a thing that squeezes them like bakers' dough;' and I said, 'there is not half the scoria squeezed out of it.' He said, 'That is just because we want to sell scoria for iron.' There he was aiming at cheapness. Now, when you had got the hammer it drove out the heterogenous materials, and cleared the iron of them. It is in that respect that the great distinction is between the foreign iron and the English iron. In the foreign iron they not only use the hammer, but they work it with one or two processes more to squeeze out this heterogenous material. The common test of an iron bar is not merely the breaking of it, but putting the end of the bar into a forge and making it red-hot, and seeing if you can punch a hole near the end. If the tenacity of the iron will allow you to punch a hole through it, without splitting open at the end, that is good iron; but if you have not squeezed out all this material that is in it, it will not stand that test. When you want good iron you should have nothing but iron."

The confrere in America of the ironmaster in Wales has taken a leaf out of the book which the latter, we are happy to say, has nearly torn up. By the advocates of the American ironmasters it was admitted, not as in our favour, for which we claim it, but as against us, that there was only one of these machines now at work in this country. They were adopted during the railway mania, and when that was over they were abandoned, and we may say "a good riddance."

The Americans are continually perplexed upon the point of the competition of British ironmasters and metal goods manufacturers, and the trade in these wares between that country and this is, therefore, subject to very frequent checks. Such is the case at this hour. Customers out there order neither iron nor hardwares in any considerable quantity until they know what will be the result of these protectionist efforts. The trade in iron and hardwares with America is now, on this account, nearly at a standstill. The specifications brought by the last mail were scarcely more than *nil*. Happily there is immense vitality in the New World, and if a measure disadvantageous to this country should be adopted in the next few days, either on national grounds or because of lobbying influences, there is plenty of room to believe that as soon as it is found to be a further incubus it will, probably under the next administration, be thrown off. Whilst, therefore, there may be reason for apprehension in relation to what is now being done in Washington, that apprehension should not be of a character to check the confidence in the early prosperity of the iron and metal trades which has now fairly set in.

COLLIERY EXPLOSIONS IN LANCASHIRE.

Mr. HIGSON'S list of killed by explosions in his next report will be a saddening increase upon that of his last. In the 1867 report the total of deaths from explosion in that gentleman's district (West Lancashire and North Wales) was 28. Already three accidents this year have run up a total of 81. There was the accident at the Green Pit, belonging to the new British Iron Company, near Ruabon, on Sept. 30, by which 10 workpeople lost their lives; then there came the terrible disaster at Hindley Green, near Wigan, with its 62 deaths; and now we have a third, by which it is feared at least nine more poor people have been sacrificed. This last, which will be seen by our correspondence elsewhere, happened, on Monday, at the Norley Colliery, at Pemberton, also near Wigan, and, again, in the Arley seam. To the facts detailed by our correspondent we need add nothing here at this time, for this opportunity will occur when the Coroner has concluded his investigation. Meanwhile we cannot but urge everyone having anything whatever to do with the winning of our fossil fuel to regard these disasters as specially appealing to them to put forth more than wonted efforts to guard against carburretted hydrogen, whether slowly oozing from freshly-cut places, and singing the siren song; or gushing forth as a "blower" from a previously hidden reservoir; or, again, lying in ambush in an old goaf. We believe in all sincerity that our managers are doing, and have done, a great deal to make the working of our collieries as free as is possible from death results, but recent investigations are conclusive that we must not be satisfied with the precautions necessary "under ordinary circumstances." Further, at this moment we must remind them that a holiday period is almost invariably characterised by a looseness of discipline, which is most disastrous in its tendency.

STANNARIES' LAW AMENDMENT.—The proceedings of the Committee appointed to endeavour to obtain such amendments in the Stannary Laws as shall adapt them to present requirements, have been attended with the best possible results. The resolutions have been substantially approved by the Registrar, the modifications proposed by that gentleman being only such as appeared necessary to prevent difficulty arising in practice. In another column of this day's Journal the resolutions passed at the Truro meeting, on Dec. 14, will be found, and also the suggestions which have since been made in connection with them, at a conference of the sub-committee with the Registrar of the Stannaries Court. The Committee invite such further suggestions as may occur to those interested; and as the amendments are proposed with the sole object of improving the position of mine adventurers and the mining industry generally, by placing the law upon such a basis as shall permit of its being more cheaply and expeditiously administered, it is to be hoped that the invitation will be freely responded to. It is intended that the amended Stannaries' law shall combine all the advantages of the Cost-Book and ordinary Joint-Stock Systems, without retaining the objectionable parts of either, so that every mine adventurer, wherever he may be resident, should feel a personal interest in the matter.

THE TIN TRADE.—The announcement of a still further rise in the price of tin—the quotations for which are now 110*l.* per ton for common, and 114*l.* per ton for refined—has caused considerable animation among those interested in tin mining enterprises. The sufferings of the "bears" of the metal naturally becomes more and more acute, and the effort is now being made to create an impression that a reaction may speedily be looked for, from the inability or disinclination of the present holders to support the market. The fallacy of these arguments is well known to all immediately connected with the market, and consumers should not suffer themselves to be deceived by the hope of a decline at least during the next few months. Tin mines and tin mining companies are, of course, deriving much benefit from the present very satisfactory position of the trade, and those who have invested, or are about to invest, in them, are not likely to be disappointed.

THE LEAD TRADE.—The quantity of lead ore raised and sold in the United Kingdom last year amounted to 93,432 tons, of the value of 1,158,066*l.*; the quantity of lead produced was 68,441 tons, of the value of 1,337,509*l.*; and the quantity of silver obtained 805,394 ozs., of the value of 215,400*l.* The quantities are all of them above the average of the preceding ten years, which show 92,604 tons of ore, 66,777 tons of lead, and 612,280 ozs. of silver. The number of mines in 1867 is returned as 340. About two-thirds of the production of lead are obtained in England, about a fourth in Wales, and the remainder in Scotland, Ireland, and the Isle of Man. Above a third of the entire production in England is obtained in Durham and Northumberland; Cornwall ranks next, and then Yorkshire. In Wales, Denbigh, and Cardigan are the most productive counties. Of the 805,394 ozs. of silver obtained in 1867, Cornwall produced 314,326 ozs., Durham and Northumberland 77,678 ozs., Cardigan 63,113 ozs., and the Isle of Man 165,170 ozs. The mean price of lead ore at the Holywell sales in 1867 (rejecting a few low-priced parcels) was 12*l.* 17s. 6d. a ton. The average price in the London market of English pig and sheet lead was as follows:—For English pig, 19*l.* 11s. per ton; English sheet, 20*l.* 12s.; English pig (W.B.), 22*l.* 1s.; all three lower than in 1866. The exports of British lead in 1867 included 19,726 tons of pig lead, 4958 tons of rolled and sheet, 3963 tons of red lead, and 5026 tons of white lead; the chief customers are the United States, China, Russia, France, and India. The imports of lead into the United Kingdom in the year comprised 45,158 tons of pig and sheet, 9146 tons of ore, 1137 tons of white and 85 tons of red lead; the imports chiefly are from Spain, and Sardinia and Greece supply a great quantity.

NEW BLOWING ENGINES FOR THE WIGAN COAL AND IRON COMPANY.—Several gentlemen connected with the engineering world assembled on Monday in order to examine the blowing engines for the new iron works situate at Aspall, and to see them set in motion for the first time. The new works are of an extensive and magnificent character, as the appended description will show. The new engines blow air into ten blast-furnaces, through a wrought-iron tube, 7 ft. in diameter, near the engine-house, and lessening until it reaches the furthest furnace, the blast being delivered at a pressure of about 4 lbs. to the square inch. Before entering the furnaces the blast passes through a number of pipes, heated so as to raise its temperature from 800 to 1000° Fahr. The furnaces have closed tops, so that gas, instead of being allowed to escape freely into the atmosphere, is utilised by being conveyed from the furnaces through an 8 ft. diameter tube to the heaters and boilers, the gas thus saved serving as a substitute for coal in raising steam and heating the blast. To each furnace there are four heaters. The present number of boilers put down is ten, double-fined, and ranged in front of the engine-house, which is a magnificent structure, with a tower at least 100 ft. in height. The machinery is from the works of Messrs. Nasmyth, Wilson, and Co., of Manchester, and it was highly spoken of on Monday. There are three

engines, with six blast cylinders, and six high and low pressure steam cylinders. The diameter of the air cylinders is 100 in.; of the high-pressure steam cylinders, 45 in.; and of the low-pressure steam cylinders, 66 in. The stroke of each engine is 12 feet. All the steam cylinders have steam jackets: also the exhaust pipes between the high and low pressure cylinders. The engine beams are 36 ft. from centre to centre. Each pair of engines has two blow cylinders; each blow cylinder is above each steam cylinder. The engines being worked by high and low pressure, the high cylinder is connected with the low one by two side levers or beams, already referred to as being 36 ft. in length. The working apparatus is in duplicate, worked from one end, so that both cylinders are worked by steam valve gear; this valve gear is worked by an entirely new motion, patented by Mr. Robert Wilson. The great advantage of this new motion is that the engine works so smoothly that there is no sensible vibration when the tripper comes in contact with the valve lever, the construction being reversed to the old hand gear and tripper motion. The air to supply the blast is conveyed into the engine-house through a tower and an underground tunnel. The supply of water for the tuyeres and the engines is obtained from a high level reservoir; but after doing its work it flows into the low level reservoir, and is pumped again into the high level by one of Gwynne's centrifugal pumps. The experiment was eminently successful. A luncheon was held on the works afterwards, when Mr. John Lancaster, M.P., who presided, gave an interesting statement, showing how the Wigan Coal and Iron Company had started and progressed since 1858, when the iron works were commenced.

MINING, METALS, AND MINERALS—PATENT MATTERS.

BY MICHAEL HENRY,

Patent Agent and Adviser, Memb. Soc. Arts, Assoc. Soc. Eng.

Mr. C. DRAKE, Renfrew-road, Kennington, has specified a patent relating to the construction of concrete buildings and apparatus used therein. In this specification the patentee states that in constructing concrete buildings the patentee erects wrought-iron upright bars on either side of the wall which is being erected, and he connects the bars together by metal straps passing through slotted holes in the bars, and secured by pins passed through them. There are several pin-holes in each strap, so that it may be adapted to a wall of any thickness. These uprights are in this way set up in pairs, one on either side of the wall, at convenient distances along the wall, and between them are placed flanged plates of iron. The plates are fixed to the uprights by bolts. The uprights may be of the full height of the wall, with bolt-holes through them at intervals from top to bottom, the intervals corresponding with the distance between the bolt-holes in the flanged plates, so that as the wall progresses, by the filling in of concrete and other suitable material between the plates at the front and back of the wall, these plates may be shifted progressively further and further up the wall. Usually, however, he does not make the iron uprights the full height, but as the wall progresses he shifts them upwards, in the same way as the plates—that is to say, when the uppermost strap which holds the pair of uprights together, becomes built into the wall, he removes the uprights, leaving the strap in the wall, and he then replaces the uprights on the strap in the wall, so that the strap now passes through a lower strap-hole or slot of each upright, and the uprights are then secured by pins as before. To form the corner or angle of the wall he sets up a pair of uprights on each side of the corner or angle, or a pair of uprights are set up on each side of the corner or angle, and between them are fixed flanged plates, bent to the angle required. To carry the scaffolding, iron brackets are employed, which are attached to the uprights; the upper and lower ends of the bracket are forked, and embrace the upright, and bolts pass through the bracket and upright.

A patent has been specified by me as a communication from ERNEST DELIGNY, of Paris, relating to "Improvements in converting basic phosphates of lime into soluble acid phosphates of lime, and in obtaining and utilising sulphide of lime." According to the present invention, the sulphurous acid employed acts energetically on all basic phosphates of lime, and converts them into soluble acid phosphate and into sulphite of lime, the latter becoming insoluble as soon as the excess of sulphurous acid is withdrawn from the solution. Water at ordinary temperature only dissolves 50 times its volume of sulphurous acid gas, say 0·144 of its weight; and a saline solution is obtained from water saturated with sulphurous acid would be too weak, and it would be expensive to extract a soluble salt by evaporation therefrom. According to this process, this saline solution is collected, and saturated again and again, with sulphurous acid gas, and then pass it over basic phosphate, which acts on it until a sufficiently concentrated solution is obtained. It should be stated that sulphurous acid in excess maintains the lime in a state of soluble bi-sulphite, and, consequently, the liquids can be readily passed through the basic phosphate in a state of atoms, or a pulverulent condition. Next, heat is employed to decompose the bisulphide of lime, and this heat volatilises an equivalent of sulphurous acid, precipitates the sulphite of lime, and separates it from the acid phosphate. When the liquid is evaporated, either in the open air in warm climates or in heated boilers, acid phosphate of lime is obtained; this phosphate, containing a very small proportion of sulphite, which is promptly and spontaneously converted into sulphate of lime, a product very suitable for agricultural purposes. The sulphite of lime, which forms an abundant residuum of this manufacture, is a product which may be utilised, and rendered available for many industrial or useful purposes; among these we may specially mention—first, it may be used for bleaching; secondly, it may be employed for reproducing sulphurous acid in all localities in which the manufacture of sulphate of soda with sea salt leaves a large excess of residuary hydrochloric acid, and in this case the treatment of the phosphates will only require a small proportion of sulphurous acid finally wasted from the acid worked up in various combinations hereinafter mentioned. Thirdly, sulphite of lime may be substituted for sulphur used for fumigating vines. Fourthly, this sulphite of lime may be employed for producing sulphite of soda by means of its reaction on sulphate of soda, whereby sulphite of soda and insoluble sulphate of lime are obtained. The ordinary apparatus, as above described, may be used for performing the invention, and the liquids are raised to the top of the condensing towers by any ordinary means. Ordinary apparatus, such as is well known for the purpose, is used for concentrating the acid phosphate in solution. The dimensions of the apparatus, of course, vary according to the nature of the sulphur and pyrites and the phosphates to be treated, and the dimensions of the condensing towers and solution vats vary according to the degree of hardness or friableness of this substance; these towers not only serving for condensing the gaseous sulphurous acid, but also as powerful continuous solution apparatus. However, it must be understood that no claim is made to these arrangements of apparatus, but that the principal distinction made, and essential feature of this invention, consists in the employment of sulphurous acid, for the purpose of acting upon the basic phosphate of lime, and also obtaining concentrated solutions of acid phosphates, leaving a residuary product of commercial and industrial utility. It may be mentioned that the apparatus required for producing sulphurous acid is much less expensive than that required for the production of sulphuric acid; also, that in the production of sulphurous acid, whereof the equivalent of saturation is the same as that of sulphuric acid, only one material is required—namely, sulphur or pyrites; hence all the expenses involved in producing sulphuric acid, and especially the costs of nitrate of soda, and of steam, and the wear and tear of lead chambers, are avoided and economised. Indeed the first and subsequent costs of the manufacture would be very considerably reduced. The product obtained, according to this invention, will contain the useful portion of the phosphates, concentrated to the highest degree, and it is, consequently, capable of being conveyed inexpensively to various parts of the country as a liquid or solid manure. In the ordinary process the nodules have to be crushed, but when the sulphurous acid towers are used, as hereinbefore described, the nodules have only to be sprinkled, and they are acted on and dissolved in a continuous manner. The residuary sulphite of lime may be utilised in various ways, and its employment in the manufacture of sulphite of soda is new and advantageous, because it avoids the necessity of treatment with carbonate of soda. If there be no phosphate of lime available, sulphite of lime may be prepared by sulphurous acid and carbonate of lime; and when, thereafter, the double decomposition of sulphate of soda and sulphite of lime is effected, sulphite of soda is obtained, which is a very useful product in the manufacture of sugar.

COLLIERY INSURANCE.—It is proposed to inaugurate a colliery insurance society, with a view of defraying the cost of accidents to property, and support the widows and children of the miners killed until they are in a situation to provide for themselves. The premiums are to be fixed either according to the number of men employed, quantity of coal raised, or value of coal at the pit's mouth, as may be hereafter determined.

MANUFACTURE OF IRON DIRECT FROM THE ORE.—At the Ringgold Iron Company's Works, in Pennsylvania, an improved process of manufacturing wrought-iron, the invention of Mr. J. Jameson, has for some time past been in successful operation. The furnaces are somewhat of an oven shape, having, however, a stack from the top of about 20 feet in hight. A refining fire is in front, into which the blast-pipes enter on the side. The gas that is evolved from the fuel passes into a chamber, where combustion takes place, and thence the combustion of the gases continues till above the fifth chamber it passes (together with such deleterious qualities as have been taken up from the ore in its progress) through and out of the stack. The five chambers are called in the Jameson patents the deoxidising chambers. The ores are calcined, then crushed, and first placed in the top or fifth chamber. Into the first and second chambers a small jet of steam is injected, whereby hydrogen is generated for the purpose of aiding in desulphurising and dephosphorising the ores. The floor of the top chamber is a table made of fire-clay blocks, with an opening at the end opposite from the door or entrance through which the raw ore is thrown in. On this table the ore is spread out, and after being here subjected to the operation of the burning gases it is then pushed down through the opening at the end of the table opposite to the door on to a like table in the chamber below, where it is again spread out, and here it remains for a time and in like manner passes on to the table of the third chamber; there, after undergoing a like operation, it is passed to the second chamber, thence it goes to the bottom or the first chamber. Thus every particle of the ore is equally operated upon. By this time the ore is almost a pulp, and then it is passed into the charcoal bed and refining chamber. Here the loop is soon formed, when it is taken out, and the hammer soon presents you with a bloom of from 225 to 250 lbs. weight. It is well known that generally the blooms produced by the direct processes are of inferior quality, whilst a very large quantity of ore and fuel is used in their production. With the Jameson process these difficulties are avoided—a ton of blooms being produced with the same quantity of ore and fuel as is now employed to make a ton of pig metal in the blast-furnace. The production is stated to be unfailingly uniform.

REPORT FROM SCOTLAND.

DEC. 23.—We have had a rather weaker pig-iron market this week till to-day, and little business doing, merchants studying the creditor and debtor sides of their ledgers, and balancing their cash against their pig-iron. Monday and yesterday 53s. 4½d. cash was all sellers could obtain for the small parcels which changed hands, and 53s. 7d. a month; but to-day we had a very strong market, and prices rose to 53s. 8d. to 53s. 10d. cash, 53s. 11d. to 54s. a month, closing buyers 53s. 9d. cash, and 53s. 11d. a month, sellers 1d. more. No. 1, g.m.b., 54s.; No. 3, 51s. 6d. No change in makers' iron, excepting Calder, which is now quoted 57s. The shipments for the week were considerably in advance of those of the corresponding week of last year, being 8840 tons, against 5575 tons, which makes the estimated shipments to date 562,940 tons, or fully 30,000 tons less than at the same date in 1867; while, on the other hand, we have imported 94,615 tons of Middlesborough iron till date, which is an increase of 42,380 tons. Manufactured Iron is in some demand for forward delivery, and there are makers who are refusing orders forward at current quotations. Specifications for delivery in the first three months of the year may be easily had just now, but as there are hopes that an advance on present quotations may not be far distant, these are not so readily accepted. At Blochairn, very considerable extensions have, and others are in course of, being carried out. New heating furnaces, adapted to Wilson's patent, and additional puddling-furnaces, are being erected, and a series of seven new boilers, for supplying steam for working the entire machinery, a good way removed from the mills, have been completed. To the new foundry and turning shop has been added a large hall, which was opened the other night, when 700 of the workers and their wives held a *soiree*, which was presided over by Mr. Thomas Hannay, one of the partners.

Coals are very quiet, at stationary prices, the shipments participating in the dulness. Last week we sent foreign, coastwise from the Scotch ports, 27,545 tons, against 28,175 tons in the same week of 1867. A few weeks of frost would do the trade some good. The continued stagnation in the coal trade is alarming the miners, and, as the wages are varied, a consultation is to be held on Monday, Jan. 4, to see what is to be done. Hamilton, Motherwell, Larkhall, and Wishaw are paying 4s. to 4s. 6d. a day, whereas 3s. is the average in Fife and Ayrshires, and 3s. 6d. in Linlithgow. To bring these latter places up to the highest standard is impossible. This the miners know, and are afraid that they will have to face a reduction at the beginning of the year.

The co-partnery carried on here under the firm of Forrester, Robson, and M'Culloch, coalmasters, has been dissolved by the retiring of the last-named partner.

Amongst the last launches of the year from the Clyde were—1. A screw-steamer of 1300 tons burthen, with engines of 250-horse power, for the British and African Steam Navigation Company. She was named the Bonny, and is the pioneer of a new line of steamers intended to trade between Glasgow, Liverpool, and the principal ports of the West Coast of Africa. The builders, Messrs. Randolph, Elder, and Co., have on the stocks for the same owners two sister ships, which will be named the Roquelle and Congo.—2. For the service of the Austrian Lloyd's Steam Navigation Company a handsome iron screw-steamer named Vesta. Her dimensions are—length, 274½; breadth, 34; depth, 26 feet; and she measures 1828 tons gross, N.M. Machinery, on direct-acting surface-condensation principle of 300-horse power nominal.—3. For the Bremen and Baltimore trade a screw-steamer of 2200 tons, which was named the Ohio. She is of the following dimensions:—Length, 290 ft.; breadth of beam, 39 ft.; depth of hold, 30 ft.

REPORT FROM NORTHUMBERLAND AND DURHAM.

DEC. 24.—The Pig-Iron, and also the Finished Iron Trade, is considerably better, and prices are expected to advance early in the new year. The iron shipbuilding trade generally is also pretty good, and so are the chemical trades on the Tyne. Among the trades lately introduced on the Tyne, the manufacture of concrete for building purposes appears to be worthy of notice. It appears that this substance has lately been tried for building walls, and also entire houses, with the greatest success, the cost of concrete being much less than either stone or brick; the manufacture of this substance, therefore, promises to become of some importance here. New alum works are also shortly to be established on the Tyne, and the extension of some of the chemical works is also likely to take place shortly. The general engine and bridge manufacturing trades, &c., are not so good as might be wished; those trades are indeed flat, and a considerable amount of holidays are to be given at most of the large works. Although there are some good orders at most of the large works—that is, at Abbot's, Hawk's, Black, Hawthorn's, &c., Gateshead, and at Stephenson, Hawthorn's, and Armstrong's, in Newcastle, yet generally speaking the works are not very brisk, as two, and in some cases three, weeks of holiday are talked about. Still it is expected that all trades connected with the iron and engine trades will improve in the spring.

At Middlesborough, on Tuesday, there was a fair attendance at the iron market. Makers of manufactured iron reported an improved tone in the market, and that prices continued to have an upward tendency. There was a considerable amount of business in forge and angle iron, and shipbuilders on the Tees and Tyne being pretty well employed the demand for plates is active. In pig-iron a good many transactions took place, and stocks are decreasing. Quotations are reported at—No. 1, 47s. 6d.; No. 3, 44s.; and No. 4, 43s. Foundries are tolerably well employed.

The Coal and Coke Trades continue dull, on the whole, but as the iron and other trades are better an improvement in these trades cannot be far off. A strike has taken place at the Walker Colliery, owing to some misunderstanding. It appears that some change has been made in the mode of working which the men strongly object to, and this strike is the unfortunate result. It is, however, hoped that an understanding will shortly be arrived at between the parties.

Another new safety-lamp for miners has just been introduced in this district by Mr. T. S. Horn, of Newcastle-on-Tyne. In constructing a safety-lamp according to this invention, the base of the lamp forms the receptacle for the oil, having a tube in the centre for the insertion of the wick, and for supplying the lamp with oil. Above this receptacle, and attached to it, there is an air chamber perforated round the circumference, or surrounded with wire gauze, for the admission of air horizontally at a point below that of combustion. The top plate of this chamber is also perforated with very fine holes for the admission of the air to a combustion chamber which surrounds the wick, and is formed of metal of a dome or other shape, having an aperture at the summit through which the wick can pass. This metal dome is fitted by a bayonet joint, screw, or other means, into a metal flange, which flange has formed on its outer or upper surface an annular groove for the reception of a glass chimney, which is cemented therein. By the use of the dome the air for supporting combustion passing through the air chamber from below impinges on the flame at the point of combustion, rendering such combustion more complete, and, therefore, affording increased light. This dome also acts as an extinguisher should the lamp be overturned by accident, or otherwise, as the light in that case will immediately die out. The products of combustion pass up the glass chimney through a contracted aperture in a metal cone fitted thereon, and become diffused by escaping through small perforations in the copper caps fitting on to the glass chimney, and enclosing the cone.

At the St. Hilda's Colliery workmen's annual dinner, on Monday, Mr. John Swallow (managing viewer of St. Hilda's and Harton Collieries) presided, and was supported by Messrs. John Swallow, jun., John Heckles, Wm. Grey, M. Heckles, John Swalwell, &c.; the vice-chair was occupied by Mr. C. Bailey, managing viewer of Heworth Colliery. The Chairman gave the usual loyal and patriotic toasts, and in doing so expressed the great pleasure he had in meeting the men again. They had had a very good year indeed, and the whole of the men appeared happy and healthy, and seemed as if they had enjoyed the year. They had had more busy years, but he thought they were all the better for an idle day now and then. The Chairman next gave the "Coal Trade," which he said was an important toast to them. There were great fears among some people in the country that the coal fields would soon be worked out, but in his opinion there was no need of fear. He was sure if the country only gave them plenty of trade he would guarantee the pitmen would find them plenty of coals. The Chairman gave the "Owners of Harton and Hilda Collieries," and in doing so said he was sorry previous engagements had prevented Mr. Chas. W. Anderson, one of the owners, from being present, but that gentleman had expressed the hope that they would enjoy themselves. During the year, he was sorry to say, they had lost Mr. W. F. Blackett, one of the owners. Mr. Blackett was known to them as a most honourable and respected gentleman. The sons of Mr. Blackett had succeeded to the collieries, and, along with Mr. Ralph Park Phillipson, they all took great interest in the welfare and comfort of the men. The Chairman next gave the "Health of the Miners of Harton and Hilda Collieries," and in doing so said during the many years he had been connected with them they had manifested the utmost good will and good feeling. A number of other complimentary toasts followed, and Mr. Matthew Heckles proposed "Success to the Miners' Permanent Relief Fund," urging upon miners to support the institution.

REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

DEC. 24.—The Preliminary Meeting of the South Staffordshire Ironmasters' Association is to be held on Thursday, but it is not anticipated that any change will be made in prices. No doubt a few firms are pretty well supplied with orders, but generally there have been fewer given out during the last month, and full time is by no means universal. There are still good grounds for hoping that trade will improve in the spring, but with the great extent of the iron works of the country anything like an advance even of 10s. a ton seems hopeless just at present, and most of the leading ironmasters are of opinion that such a step would prostrate the trade of South Staffordshire for a great part of next year. Let it be remembered, too, that South Staffordshire was the last to reduce prices nominally, for really they had long been reduced, and to lower wages, and why should it be the first to try to raise them? The obsoleteness of this plan of declaring prices is more and more apparent, and it is hard to see what end it answers, except to enable a few people under cover of it to get a better price, whilst they buy at a low one. It does far more to raise the question of wages than to prevent disputes, and it certainly operates to increase fluctuations, as it leads to undue accumulation of stocks, in fear of an advance, which excites anticipations often never realised. The absence of any great demand in the face of a possible advance, and certainly that there will be no reduction, is strong proof that as yet there are no large orders held back.

Pig-Iron is well sold, and present prices are higher, but sales at these rates are not extensive. The vendors ask 3*l.* 5s. to 3*l.* 10s. for best all mine native pigs, 3*l.* 8s. 9d. to 3*l.* 10s. for hematites, and 2*l.* 15s. to 2*l.* 17s. 6d. for cinder pigs. Ordinary coal is 6s. 6d. to 8s. at the colliery, according to quality and delivery; thick coal from 9s. to 11s. per ton. There are a few additional furnaces to be put into blast soon.

The annual report of the Staffordshire Potteries Chamber of Commerce expresses satisfaction at the establishment of a Board of Arbitration and Conciliation in that district, with a view to arrange disputes between men and masters. Referring to the question of Technical Education, they state in answers they gave to certain questions that in one Pottery firm 2000*l.* a year is paid to foreign designers and workmen, and on foreign designs and designers the improvements of the trade of the district greatly depends. This ought to be a strong argument for education being made to bear upon the work of every-day life. They distinctly admit the necessity of providing for the consumption of smoke in the district.

Two deaths from fall of coal were the subject of enquiry, on Friday, at Brockmoor. In one case a "doggy" of considerable experience lost his life by what appears to have been a pure accident. In another a man caused his death probably by removing a tree with his hands, when he was advised to use the pricker.

Edward Townsend, of the Whimsey Colliery, Oldbury, was summoned, at the instance of Mr. Baker, Inspector of Mines, for neglecting to frame and transmit to the Secretary of State special rules for such colliery, within three months after the working of it was commenced or renewed; and also with neglecting securely to fence a certain pit or shaft in the colliery, then out of use, or used only as an air-pit. The defendant pleaded guilty to both charges, and, as the Inspector did not wish to press the case severely against him, the magistrates imposed a fine of 20s. and costs in each case.—William Turner was summoned for not framing and sending to the Secretary of State rules for a colliery in the same district, and, pleading guilty, was fined 20s. and costs.

REPORT FROM DERBYSHIRE AND YORKSHIRE.

DEC. 24.—The various branches of the Iron Trade remain without alteration in the northern part of Derbyshire, some of them being tolerably active, and others rather quiet. At Eckington a good business continues to be done, and there is a fair demand for pipes and ordinary castings. There is not quite so much doing in heavy girders, of which a few months since a very large number were turned out. The make of pig is still considerable, most of the blast-furnaces in the neighbourhood of Chesterfield and on the Erewash Valley line being in full operation. The continued mild weather has by no means improved the demand for house coal, so that the tonnage going to London is of a moderate character for the season. From Clay Cross about 1000 tons a day are sent to the metropolis, and the average of the last few weeks is maintained at Staveley and other places. At Church Gresley, Swadlincote, and Coton Park a fair business is being done.

In the Burton-on-Trent district much satisfaction is felt that the collieries belonging to the late Marquis of Hastings, and which are encumbered to some extent, are to be continued in work under the management of Mr. Woodhouse, of Derby. The collieries which belonged to his lordship are the large one at Church Gresley, employing between 300 and 400 hands, and the Old and New Moira Collieries in the adjoining county of Leicester. There is a feeling of general regret at the rather sudden death of Sir T. Gresley, Bart., the recently-elected member for South Derbyshire. The deceased baronet was a large owner of coal, and which was somewhat recently opened out on his estate, and we believe he was the lessor of the Coton Park Colliery, worked by Messrs. Binns, Jackson, and Co. Thus within a very short time two of the leading owners in the Burton-on-Trent district have been taken away.

There is rather more doing in several of the branches of the Sheffield Trades, and there has been at several establishments considerable activity during the early part of the week. The heavy armour-plate trade is more active than it has been, and is likely to continue so. The rolling and other mills are also kept well going. This being "bull-week" in Sheffield, when the men, if there is plenty of work, are kept going night and day, so as to make up for the holidays which are taken at Christmas, several branches have been kept in almost as full activity as in some former years, when trade generally was much better than it is at present. The large establishments in the neighbourhood of Rotherham are fairly off for orders, and nearly all the rail and other mills in the district are doing well. Plates and sheets are also in fair request. The demand for coal from the South Yorkshire collieries is far from active, so far as household qualities are concerned, and the tonnage going to London has not materially increased. This, as has so often been stated in the reports from Yorkshire, is the result of the high rate charged by the railway companies, which ensures a coal inferior to the Barnsley and Silkstone seams having a very much larger sale in the metropolitan market than the former has. The South Yorkshire Coalowners' Association have again taken the matter up, and have recently memorialised the railway companies on the subject, with what result remains to be seen. In Steam Coal there is only a very moderate business being done, and now that the trade to Copenhagen is stopped in that direction, and through the Sound to the Baltic, very little will be done for some months from the Yorkshire ports. It may be stated that the quality of coal going to Copenhagen during that portion of the year when the navigation is open is from 24,000 to 30,000 tons.

The question of the advance of the colliers' wages in South Yorkshire to the extent of 5 per cent. was discussed at a meeting of the miners' delegates at Wombwell, on Monday. Although the largest proportion of those present were in favour of taking measures for enforcing the demand, wiser counsels prevailed, and no decision was come to on the subject. It is now believed that the matter will rest for some time, and that there will be no interruption to trade.

At the Tapton Colliery Company, on Monday, an excellent dinner was given by the directors to the 380 men and boys employed by them, to celebrate the connection of the Lockoford and Newbolds Pits. Previous to the dinner the directors and their friends inspected the works, under the guidance of Mr. Holford, the managing director. On the main incline a large proportion of the drawing is done by steel wire-rope, worked by the engine at the Newbold Pit, the tramway being constructed of single-headed rails with fish-joints, laid in patent Belgian iron sleepers. The advantage of the incline connecting the two pits is very great, as in future the coals got in the Newbold Pit will be sent down the incline to Lockoford, and there at once transferred to the railway-trucks in the siding which runs into the Midland Railway. Hitherto the company have had the expense of carting the coal from the Newbold Pit, and have had a toll-bar to pay, both of which expenses will now be avoided, and the dispatch of the coal made practically unlimited.

At the Holmes Colliery, near Rotherham, a peculiar accident, fortunately not attended with any loss of life, occurred on Friday. At about nine o'clock in the morning a cage was overwound, and one of the corves, with its contents, fell down the shaft, totally choking one half, about 60 yards from the bottom, and rendering the other half impassable. Nearly 400 men and boys were in the pit at the time, and some hours elapsed before the tackle could be got in working order, so as to raise the men. An ample supply of bread and cheese, provided by the proprietors of the colliery, was lowered to the men as soon as practicable, that the inconvenience of remaining beyond the proper time in the pit might be as far as possible compensated for.

The number of lives lost by the explosion at the Norley Hall Colliery, Pemberton, near Wigan, which occurred on Monday morning, has been ascertained to be seven. The explosion occurred in the Orrell Four-foot seam, which corresponds with the Arley of other parts of the Wigan coal field. Near the bottom of the downcast

which is 420 yards from surface, there occurs an upthrow fault, and a tunnel had been thrown out to strike the upthrow about 28 yards from the bottom. A party of men were about to commence working in the tunnel, when an explosion occurred, resulting in the number of deaths stated. As soon as the shaft was sufficiently repaired to allow the cages to be put in, a party of explorers including Messrs. Thompson, manager of the colliery, Watkin and Clark (Blundell's Collieries), Harbottle (Walthen House Collieries), and some experienced underlookers and workmen commenced an examination. Mr. P. Higson, the Government Inspector, and his son visited the pit on Tuesday, and on Wednesday morning Mr. John Higson, and Mr. William Pickard, miners' agent, joined the exploring party. Some doors and stoppings were found to have been blown down, but the examining party succeeded in reaching a point distant about 200 yards from the extremity of the workings. Here the after-damp was very strong, and it was not considered advisable to proceed further. Workmen were forthwith set to work to put up bratticing, and rebuild stoppings. The inquest has been formally opened by Mr. C. E. Driffield, the district coroner, in order to permit the necessary certificates for burial to be given.

REPORT FROM MONMOUTH AND SOUTH WALES.

DEC. 24.—Notwithstanding the year is so near its close, the hands engaged at the leading iron-making establishments are, as a rule, fairly employed, although there is but little done in the way of fresh orders, the present time being chiefly devoted to settling and balancing, and clearing the way for new orders, which are generally given out at the commencement of a year. It is somewhat pleasing to find that the hope hitherto expressed as to the trade attaining a more cheerful and satisfactory position than it has held for the past two years continues to be confirmed by the reports which come to hand, and which characterise the trade as being in a healthy and hopeful state. Several fresh contracts have been received from New York during the past week, and there is every prospect of a fair amount of business being transacted with that country for some little time to come. Large quantities of rails continue to be sent to Mollendo and Islay, and for some weeks to come by far the largest clearances will be made to the south-west coast of America. There is an average amount of business being transacted with the continental markets, and it is to be hoped nothing will arise out of the rupture of diplomatic relations between Greece and Turkey to disturb the peace of Europe, and retard the return to more prosperous times, which appear to be on the eve of commencement. There is every prospect of a revival of transactions with British India, orders being more numerous than for some time past. The home trade is at present characterised by a degree of quietness, but as there is a gradual improvement in speculative feeling, several contracts will, it is expected, be given out early in the new year. Pigs of the best brands command a fair sale at full list quotations. Tin-Plates command a ready sale, and makers have sufficient orders on their books to keep their mills fairly employed. Stocks in the American markets are known to be reduced to a very low ebb, and makers are anticipating the giving out of several fresh orders in the early part of the ensuing quarter.

The Steam Coal Trade has suffered considerably from the storms which have prevailed, merchants and shippers experiencing great difficulty in obtaining tonnage, the number of vessels arriving at the local ports being insufficient to meet the demand. Should war break out between Turkey and Greece a stimulus will be given to the coal trade, rather acceptable after the depression which has lately prevailed, and during the past week rates to some of the Mediterranean and Turkish ports have advanced from 1s. to 2s. per ton, in anticipation of a rupture between the two countries. There is slight increase in enquiries from the mail packet stations, and the companies' purchases have once more reached the average. France is at present by far the largest purchaser, and with the continental and other foreign markets there is an average amount of business being transacted. The output at several of the collieries is not so large as it has been, and as shpments are but slowly effected there are a large number of loaded wagons still crowding the sidings and tramways. The house coal trade has somewhat improved, there being an increase in the purchases on account of the West of England and Irish houses.

It is in contemplation to extend the Cowbridge Railway to Llantwit Major, on the sea-coast of Glamorganshire. The principal landowners are in favour of the extension, and there is a fair probability that the necessary capital will be forthcoming to carry out the works.

Changes are reported to be about taking place in the proprietorship of the Tredegar Iron Works. It will be remembered that about 12 months ago, the shares held by the Homfray family were purchased by Mr. Forman and Mr. Fothergill, and the two latter have since held the works. Mr. Forman, who is immensely wealthy, has arrived at an age when it is natural he should desire to retire from the active pursuits of business, and the change that is about taking place is, it is said, his retirement from the concern in favour of a younger man.

Mr. Richard Roberts, mechanical engineer of the Ocean Steam Coal Collieries, on his leaving for another situation, has been presented with a valuable gold guard and medal, on which is engraved:—"Presented to Mr. Richard Roberts by the workmen and others of the Ocean Steam Coal Collieries for his good conduct and straightforward manner towards them."

An alarming accident occurred at the Cwm Avon Copper Mills, on Saturday morning. It appears that the mills were going at the usual speed, when suddenly, through some unaccountable agency, the fly-wheel was scattered in pieces over the works, bringing down a large portion of the roofing, and doing a great deal of damage to the adjoining machinery; but, wonderful to relate, although there were upwards of 120 men employed within the walls of the works at the time, no one was injured. A portion of the fly-wheel, computed as weighing 28 cwts., was found outside the works embedded 7 ft. in the soil, and within 3 yards of a publichouse, having been driven a distance of 90 yards in a true line, and retaining its circular motion, it having made a revolution of 3 ft. in the earth.

The arrivals at Swansea include—the Symmetry, from Carloforte, with 380 tons of zinc ore, for Richardson and Co.; the Clara, from Carloforte, with 385 tons of zinc ore, for H. Bath and Son; the Beta, from Carrizal, with 568 tons of copper regulus, and 162 tons of copper in bars, for H. Bath and Son. the America, from Carloforte, with 359 tons of zinc ore, for H. Bath and Son: the Florence, from Cuba, with 503 tons of copper ore, for the Cobre Mining Company; the Louise Ann, from Lisbon, with 158 tons of super-phosphate, for Vivian and Sons; the Alerte, from Bilboa, with 140 tons of iron ore to order; the Acacia, from Carloforte, with 320 tons of calamine, for Richardson and Co.; the Gertrude, from Almeria, with 120 tons of zinc ore, and 78 tons of Esparto grass, for A. M. Bell; the Princess, from Carloforte, with 281 tons of zinc ore, for H. Bath and Son; the Maggie, from Tilt Cove, with 440 tons of copper ore, for H. Bath and Son. [The cargo of ore and regulus per Emily Waters, 35 tons of copper ore per Rose and Mary, and the 74 tons of lead ore per Pacific, reported in last week's Journal, were consigned to Messrs. Elford, Williams, and Co.]

In several articles in the Journal it has already been shown that the mining interest will be much stronger and more influential in the new Parliament than ever it was before; but a few remarks having reference more particularly to these districts, may not prove uninteresting. Amongst those who have succeeding in obtaining a seat, and who are connected with the mining industry of the country, Mr. George Elliot is deservedly entitled to the place of honour, as one of the largest colliery proprietors in the kingdom, and a self-made man. Born at Gateshead in 1815, his father being a working collier, he was at an early age sent to work in one of the Marquis of Londonderry's pits, and from which he advanced step by step until he became a mining engineer, and now gives employment to some 10,000 persons. Mr. Elliot is President of the North of England Institute of Mining Engineers, a member of the Geographical and Geological Societies, and a magistrate for Glamorganshire; he is also one of the Royal Commissioners appointed to enquire into and report upon the extent and probable duration of our coal supply; and he was a partner of Sir Richard Glass, in what is now known as the Telegraph Construction and Maintenance Company, and by whom the Atlantic cable was manufactured. Whilst Mr. Elliot headed the poll in North Durham, Sir Richard Glass obtained a similar position at Bewdley. In South Durham, Mr. Pease, a member of the well-known family of Friends, was the favourite, and obtained the post of honour. Both North and South Northumberland return members interested in the mines of their respective divisions, the former by a member of the ducal house of Northumberland, and the latter by Mr. W. B. Beaumont and Mr. Liddell. In addition to being one of the most considerable owners of lead mines in the North of England, Mr. Beaumont is also an extensive coal proprietor in South Yorkshire, having a large estate within four miles of Barnsley. As was expected, the new borough of Middlesborough has done what it was in duty bound to do, by returning Mr. Bolckow, who, with his lately deceased partner, was the founder of that now thriving and increasing town, and which, through their exertions, has become the principal seat of the iron trade of the kingdom. Coming towards the south, we find that Leeds returned two gentlemen long connected with the mining of the county, —Mr. E. Baines, the old member, being a partner in the Denaby Main Colliery, near Mexbro', which is one of the largest, as it is the deepest in Yorkshire, and Mr. Carter, the head of the Allerton Bywater Colliery, situate within a short distance of Pontefract. In the West Riding, where the Lord Lieutenant, Earl Fitzwilliam, has several large coal and ironstone mines, Lord Milton, his son and heir, is one of the representatives for the southern division, whilst his brother has been returned for Wicklow County. The interests of Lancashire are also represented, Mr. Lancaster, the managing director of the Wigan Iron and Coal Company, having been returned for the borough named. The concern is the largest in that part of the kingdom, for in addition to either 11 or 12 very large collieries, there is in connection with it five blast-furnaces. The respected member will long be recollected for the assistance which he rendered to Capt. Semmes, of the Alabama, when that vessel was sunk by the Kearsarge, having rescued him and several of his crew whilst cruising in his yacht. In the same locality, if we mistake not, Mr. C. Turner is the owner of the Mesnes Pit. In Derbyshire, where more collieries are just now being opened out than in any other part of the kingdom, two of the largest owners of the minerals are the Duke of Devonshire and the Duke of Rutland. The former is the lessor of the Staveley coal field, or the greater part of it, and of which the annual produce is verging on 1,000,000 tons, and has now two sons and a son-in-law in Parliament, whilst the heir to the Rutland title and estates is also a member of the Lower House. In the southern part of the same county, Sir Thomas Gresley, Bart., who was one of the successful candidates for that division, is the owner of a very considerable coal field, part of which is now being worked. At Nottingham, where Sir R. Clifton came out at the last moment, and was placed at the head of the poll, the honourable member is just now engaged in sinking to the coal, which it is said runs through the greater part of the estate, and is of a very valuable character. In the adjoining town of Derby, Mr. S. Plimsoll, who has been for many years connected with the coal trade in South Yorkshire and London, and who is the patentee of the "drops" at King's Cross, obtained the seat formerly held by Mr. Cox by a large majority. Mr. Plimsoll is thoroughly up in all matters relating to the coal interest, and looking to speeches and antecedents, he may be fairly looked upon as the working miner's member. East Staffordshire will find an excellent and practical representative in Mr. M'Lean, of the Cannock Chase Collieries, whilst Mr. Hartley, so well known in connection with the iron interest, was defeated. Although the produce of all the coal pits in Warwickshire is scarcely equal to that of Staveley, we are glad to find so old and respectable a member as Mr. Newdegate, the owner of Grif Colliery, Nuneaton, once more returned to the House, on either side of which his loss would be felt. Of Mr. Disraeli's cabinet three of the members are interested in mining operations in various parts of the country. Mr. Hardy is still understood to be in the old and respected firm of Hird, Dawson, and Hardy, the owners of several extensive pits in Bradford, Yorkshire. Sir John Pakington has a colliery at Haverfordwest, and Mr. Ward Hunt has a large extent of ironstone under his estate in Northamptonshire. Gratified as we are to find so many gentlemen connected with such an important interest as the coal one must be admitted to be, it is matter for regret that so thoroughly practical a man as Mr. Jackson, the late member for North Derbyshire, should be without a seat in the new Parliament. The collieries at Clay Cross, in which the gentleman named has so large a stake, are amongst the most extensive in the kingdom, and few were better acquainted than he was with the question of capital and labour as applied to colliery workings, or who had done more to benefit the vast body of men employed by the company of which he is a principal member. As during the ensuing session of Parliament several important questions relating to the working of mines, including the limiting of the working hours of boys employed in them, is certain to be brought forward, the presence of such a large number of gentlemen practically acquainted with the subject in all its bearings, cannot but be of the greatest benefit in assisting the House to arrive at a just and equitable conclusion as between the masters and men. We may, therefore, look forward to sound and healthy legislation when the subject relating to the ventilation of collieries, the better safety of the miner, and the means to be adopted for improving his condition are brought under the notice of the House.

THE SOUTH YORKSHIRE COLLIERY VIEWERS ASSOCIATION, AND THE MIDLAND MINING AGENTS' ASSOCIATION.—A meeting of the South Yorkshire Colliery Viewers' Association was held last week, at the rooms in Barnsley, for the purpose of taking into consideration a proposal for incorporating with their body the members of the Midland Mining Agents' Association, and so extending the sphere of operations, instead of confining them, as heretofore, to one district. Amongst the members present were Mr. Woodhouse, of Derby; Mr. M. T. W. Embleton, Methley; Mr. E. Booth, Silkstone Fall; Mr. Beardshall, Smithy Bridge; Mr. J. G. Kell, Higham and Rawmarsh Collieries; Mr. Maddeson, Thornhill Lees: Mr. Appleby, Renshaw Collieries, near Eckington; Mr. T. W. Embleton, jun.; Mr. Carrington, Kineton Park; Mr. J. E. Mammatt, &c. Mr. Embleton was called to the chair, and opened the proceedings by stating what had been done by the Mining Agents' Association, and their desire to join the South Yorkshire one. One of the main objects to form an association which would include all persons having the control of colliery operations, not only in Yorkshire, but through the entire extent of the coal field, including not only Yorkshire, but Derbyshire, Nottingham, and Leicester. After a short discussion, and the transaction of some business, a deputation from the Midland Mining Agents' Association was introduced. It consisted of Mr. Miller, Strafford Main; Mr. P. Cooper, the Holmes Collieris; Mr. Hodgson, Wakefield and Leeds; Mr. Wilson, Darfield Main; Mr. Platts, Wharncliffe Silkstone; Mr. Chambers, Thorncliffe and Chapeltown; Mr. Lupton, Chesterfield; Mr. Minto and Mr. James Beaumont, the Oaks; Mr. Warburton, West Riding Collieries; and Mr. Keithley, New Hall Collieries, Leeds. The objects of the new association having been ably explained by Mr. Miller, Mr. P. Cooper, and the other members of the deputation, and a copy of the rules agreed to having been placed in the hands of the Chairman, a short discussion followed, in which several of the gentlemen present engaged. It was then agred that the rules, as presented, should be printed, and a copy sent to every member of the Viewers' Association, and that a meeting should be specially convened for arriving at a final conclusion with regard to the application of the Midland Association. It was also agreed that the meeting should take place not later than Jan. 14, and that the result should be made known to the secretary of the Midland Association within a week from that time. The deputation then returned to the King's Head Hotel, when a general meeting was formed for the consideration of the proposed amalgamation. Mr. Miller was called to the chair, and, in briefly introducing the business, said that he had recently attended two meetings of the South Yorkshire Colliery Proprietors, when the subject of the new association was introduced, Mr. W. Day, Mr. Chambers, Mr. Dymond, and other gentlemen, expressed themselves highly in favour of the establishment of such an institution, whilst there was a unanimous feeling in favour of its being supported by those present. The only difference of opinion was as to whether a guinea a year was sufficient to put the association on a firm and permanent basis. He had, therefore, no doubt whatever but what they might rely on the hearty support of the colliery owners of Yorkshire, as well as of those in more distant districts.—Mr. Keithley then moved—"That Mr. Hodgson, the secretary, be requested to issue a printed circular to all the members, embodying the views and the resolution come to by the South Yorkshire Mining Viewers' Association."—Mr. Minto seconded the resolution, which was agreed to.—Mr. Keithley said there was an Association of Mining Agents which had been in existence for about two years in Leeds, and the members of which were desirous of attending a general meeting of the new association, as he had no doubt all of them would be desirous of joining the Midland Association, which was capable of doing such a vast amount more good than could be expected from a limited body.—Mr. Warburton then moved—"That after receiving a reply from the South Yorkshire Viewers' Association, the secretary within one week from that time should call a general meeting of the members of the Midland Association."

THE HEATON STEEL PROCESS.

Subjoined is a further communication from Mr. Bessemer in relation to the important controversy regarding the Heaton steel process:—

SIR,—The tone of injured innocence which Mr. Heaton affects in his letter of the 14th will appear simply ridiculous when it is known that it was from Mr. Heaton himself that I first learnt the fact that the product of his converter was not a fluid cast-steel, capable of at once being formed into ingots (like my own), but an agglomerated mass, usually emptied out on the floor of the foundry. The reasons which rendered it expedient for Mr. Heaton to admit this fact are fully explained in the sequel; it is also attested by Dr. Miller in his published report. In stating what he saw at the Langley Mills Dr. Miller, after describing the early stages of the process, uses the following words:—

"When all had become tranquil, the converter was detached from the chimney, and its contents were emptied upon the iron pavement of the foundry, the crude steel was in a pasty state and the slag fluid, the cast-iron perforated plate had become melted up and incorporated with the masses of molten metal, 3 or 4 cwt. of crude steel from the converter was transferred to a re-heating furnace, then hammered into flat cakes, which, when cold, were broken up and sorted for the steel-melter, two fire-clay pots charged with a little sand were heated, and into each 42 lbs. of the coke steel was charged; in about six hours the melted metal was cast into an ingot.

This evidence from a gentleman occupying the high position of Dr. Miller, who was expressly employed to go down to the Langley Mill Steel Works and report on the advantages of the process for parties who are getting up a joint-stock company, amply justifies every word I have said in my letter of the 2d inst., and at the same time unequivocally refutes a great portion of the arguments by which Mr. Heaton still attempts to make it appear that his process produces cast-steel direct. Not only does the evidence of Dr. Miller and the other experts employed show this fact of solidification of the metal in the process, and the hammering and re-melting before cast-steel is obtained, but these gentlemen do not say one word in their report as to Mr. Heaton having any cheaper way of making cast-steel than by re-melting his crude steel in crucibles, which Mr. Heaton in his cost-sheet puts at an additional cost of 5*l.* 10s. per ton, which additional cost throws cast-steel so made wholly out of the market for railway bars (its most important use). But, strange to say, the cost-sheet printed for the private information of shareholders in the new great company speaks of a patent reverberatory furnace for making cast-steel ingots from crude Heaton steel. On the successful working of this mythical furnace the whole question of the cost of cast-steel rails now rests, for the estimate of the cost of cast-steel rails issued by the company is based on the assumption that crude steel can be melted in a reverberatory furnace patented by Mr. Heaton. How is it, may I ask, that Mr. Mullet and Dr. Miller are wholly silent on this vital question? These experts have, it would appear, all been to see the play of *Hamlet*, but the Prince of Denmark was not there. However much the absence of all reference to this furnace may be overlooked by the public in their hasty perusal of the bundle of testimonials prepared by these experts, I can assure you that I have read over the reports, and they are as silent as the tomb on this all important point of the case, notwithstanding that the whole calculation put forward by the company of the cost of cast-steel rails rests on this patent furnace being able to melt crude steel of a mild enough quality to form ingots suitable for making rails,—a feat which I utterly disbelieve it has ever accomplished.

The process of melting which Dr. Miller saw in operation brings up the cost of steel ingots several pounds sterling per ton above the cost of Bessemer steel.

I will now answer the three questions propounded in Mr. Heaton's letter.

Firstly, "Can Heaton make steel as good as Bessemer's and at a less cost from the same materials, with a plant costing vastly less?"

I answer no; distinctly no, and for these reasons:—Mr. Heaton, by his own admission, requires to employ 28s. worth of nitrate per ton, in lieu of using atmospheric air; nor does this extra expenditure produce cast-steel; therefore, the further cost incidental to a second melting must be added.

Mr. Heaton's apparatus is less perfectly developed, and therefore less costly, but 10 per cent. on the cost of the Bessemer apparatus does not amount to more than 2s. per ton on the steel made by it.

Secondly, "Can Heaton make good steel and iron from Cleveland and Northamptonshire pig-iron—from brands, in short, that Bessemer could not use, owing to the presence in them of large quantities of sulphur and phosphorus?"

I admit freely that I cannot make good steel from the brands named, but the iron I am now buying of the highest quality, at 65s. and 70s. per ton, costs less for the ton of steel produced than the cost of the low class of pig-irons named when the 28s. worth of nitrate is added to their cost, so that the materials for a ton of Heaton crude steel cost more than the materials used in the Bessemer process, while the latter yields cast-steel, to obtain which Mr. Heaton must re-melt, at much cost.

Thirdly, "Can he make good steel and iron as cheap and cheaper from the commonest pig as Bessemer can from the most expensive brands?"

Again, I distinctly say no, he cannot; for, as before shown, the common pig and the nitrate together cost much more than the pure iron used in the Bessemer process, while the Heaton product can never compete with cast-steel. For the more easy appreciation by the general reader of the important difference between cast and all other kinds of steel, I will compare it with a material with which everyone is familiar—plate glass. This material can be made into the largest sizes, is stronger, more perfect, and more beautiful, in every respect, than ordinary window glass; everyone prefers it to the latter, and if anyone could cheapen its production, as my process has cheapened cast-steel, no other glass would be used. Puddled steel and Heaton steel very fairly represent the two kinds of common window glass—good enough to keep out the weather, but which is, nevertheless, wholly unsuited to form a mirror; for this purpose you must use plate glass, just as for a railway bar you must use cast-steel.

Mr. Heaton speaks in his letter of the necessity to use crucibles in making Bessemer tool steel. I know of no such use of crucibles by anyone, but I know that hundreds of tons of fine tool steel have been made from molten iron run while still fluid from the blast-furnace into the Bessemer converter, and poured from it at once into ingot moulds. Mr. Heaton also hints at the enormous waste of iron in my process. I have taken out the quantities of pig-iron used, and steel made from it, as returned on the regular printed forms by one of my licencees, and I find that in working 10,000 tons of pig-iron the loss was 12·45—say, 12½ per cent. Mr. Heaton cannot possibly waste less; his very impure pig-iron, according to Dr. Miller, does not contain 92½ per cent. of iron; if we add to this 4 per cent. loss in melting the pig, we deduct 11½ per cent. of iron, besides all that is oxidised and lost in the Heaton converter.

Mr. Heaton points to the fact that cold air is blown through molten pig-iron in my process, and wishes the public to believe that I cool the metal by so doing. As well might he say that blowing a powerful blast of air into a fire must cool it. Now, if there is one fact more than another beyond doubt or question in reference to my process, it is the fact that the heat produced by the cold air combining with the carbon of the metal produces the most intense heat ever known in metallurgical operations. I will not, however, further trouble your readers to wade through a long series of refutations of the many inaccuracies and distortions of facts contained in Mr. Heaton's letter, but I must beg the kind indulgence of the reader, and claim his attention to the further explanations I have to give.

In the latter part of his letter Mr. Heaton triumphantly points to the fact that I have taken out three patents for the use of nitrate of soda, and wishes, therefore, to infer that I approve his system.

Now, Sir, the explanation of this point I should not have touched upon did I not feel that it was an imperative duty on my part not to conceal facts which so deeply affect the public interest, and that these facts may be clearly understood I must go back to my patent of 1856, in which I declare my invention to consist in acting on a mass of melted crude or cast iron when in a suitable vessel by streams of oxygen (contained in atmospheric air or otherwise), and without the further consumption of fuel for heating the vessel, or the iron therein, to convert such fluid crude or cast iron into steel or malleable iron. Now, whenever nitrate of soda is placed on the lower part of a suitable vessel, and is covered by a perforated plate, the heat of the fluid pig-iron when poured on to the plate will rapidly decompose the nitrate of soda, and "streams of oxygen" will pass upward through the fluid metal, and (to use my own words) "convert such crude or cast-iron into steel or into malleable iron without the further consumption of fuel for heating the vessel or the iron." One of the conditions of my claim is, however, the retention of the malleable iron or steel in a fluid state, and the pouring of it while still fluid into ingot moulds; hence, upon this point of fluidity hangs the whole question of infringement by Heaton of my patent. Now, the manner in which the weekly advertisements of Heaton steel were worded induced me to believe that he produced cast-steel in a fluid state, although all the probabilities of the case seemed against it.

In the early part of the present year one of the proprietors of Heaton's patents waited on me, and endeavoured to persuade me to become interested in them, under very favourable conditions, and on my declining the proffered advantages, I told him that, in my opinion, Heaton's process was a direct infringment of my own, and further that Heaton's patents were invalid, and could not be sustained in law, because the invention was not new at the date of the patent. I offered to prove this to Mr. Heaton if he would come up to London. For this purpose Mr. Heaton and two of the proprietors of his patents came to London and met at my office in the City on the 3d of March last. On that occasion I explained to Mr. Heaton and his friends that making steel by passing streams of oxygen upwards through the molten pig-iron, converting it into steel, and pouring such steel while still retaining the fluid state into ingot moulds, was a direct infringement of my patent. It was then that Mr. Heaton told me that his process was no infringement of my patent, because he did not produce ingots of fluid steel by his process. Surely, this alone is ample justification for all my statements, had not Dr. Miller's report confirmed me in every particular. On this occasion I also showed to Mr. Heaton several out of the 30 odd patents taken out from time to time, by different individuals, with the express object of avoiding my legal claims, while they endeavoured to avail themselves of the new light which my invention had thrown upon the steel manufacture. I, of course, include Mr. Heaton in this fraternity, for I was the first to make steel direct from fluid cast-iron by purely chemical means, in a vessel without fuel, and wholly without manual labour, and by the use of oxygen in the gaseous form, passed upward through the molten metal. Now, does not Mr. Heaton cause oxygen gas to pass upwards through the fluid metal in a vessel where neither fuel nor manual labour is employed? And I hold it beyond question that if it were possible for him to retain the metal in a fluid state after its conversion, and pour it direct into an ingot mould, that it would constitute an infringement of my patent, and I should in such case apply to the Court of Chancery for an injunction to restrain him. All this I explained to Mr. Heaton, and hence his ready admission to me of the fact that he does not make cast-steel direct by his process.

Seeing how much Mr. Heaton has borrowed from my mode of converting iron into steel, the public will not be surprised that I should take some steps to secure myself against further inroads of this nature, and that I have taken out three patents for the use of nitrate of soda in the manufacture of steel. Among the host of forfeited patents before referred to I showed two to Mr. Heaton and his friends, one taken out by Victor Avril in 1856, and another by Sir F. Knowles in 1859, in which he says:—"I claim the purification of molten cast-iron as aforesaid, and I claim the said purification with nitrate of soda, or nitrate of potash, alone or jointly with other substances, and whether the metal be used directly or re-melted after being run into pigs or moulds," thus proving incontestably to Mr. Heaton and his friends that Heaton was not, as the legal phrase has it, "the first and true inventor" of the process of decarburising and dephosphorising pig-iron by the employment of nitrate of soda or other oxidising salts. These proofs of the invalidity of both of Mr. Heaton's patents as they then stood caused Mr. Heaton to petition the Solicitor-General for leave to disclaim the all important part of these patents—the exclusive use of nitrate of soda. This petition recites as follows:—"Whereas, since the filing of the said specification I have been informed that attempts have been made prior to the date of my said hereinbefore recited letters patent to employ nitrates of soda or potash for the purpose of converting pig or cast iron into steel," &c. I did not oppose this petition, as I might have done had I desired it. The petition was, therefore, granted, and Mr. Heaton was allowed to limit his claims to a very narrow compass, by inserting in this specification the words "I do not claim the use of nitrates otherwise than when they are used substantially in the manner and by the means herein described." The patents of Victor Avril and Sir F. Knowles having lapsed and become public property, it follows that anyone of Her Majesty's subjects may chemically treat molten pig-iron of any kind with nitrate of soda, and produce malleable iron and steel therefrom, without any leave or licence from the owners of Heaton's patents, provided they do not employ Mr. Heaton's particular method of doing it. The chemical action of nitrate of soda on the impurities contained in cast-iron will be alike in all cases; whenever these elements are brought together, the same decompositions and chemical combinations will result, without reference to the mechanical arrangements employed to bring about their union.

The use of streams or jets of air introduced into the metal in the Bessemer process has proved both simple and effectual. I have, therefore, adopted the same mode of using nitrates—that is to say, I simply inject the fused nitrate by steam pressure, in streams or jets, downward into the fluid molten iron contained in a cheap upright iron vessel lined with fire-bricks. In so doing I have great facility for checking and regulating the rapidity of the process. I do not require to mix sand and lime with the nitrate to prevent its explosive or too sudden action; nor do I, like Mr. Heaton, destroy a large perforated iron plate with every charge of steel made; and I can, moreover, operate in a red-hot vessel instead of in a cold nitrate chamber, as Mr. Heaton must do by his patented arrangement. And, further, I enjoy all rights and privileges under my patent such as the law confers on Mr. Heaton in reference to his. I can, whenever I choose to do so, license all or any of the iron and steel makers in Great Britain to use nitrate of soda and make steel at a royalty of 1s. per ton, or at such lower price as will always give my invention the preference, should the trade ever prefer the nitrate process to the system at present employed. In such an improbable event, however, the public would most likely use a modification of some of the patents for nitrate of soda that have lapsed and become public property, and neither ask Mr. Heaton nor myself for a licence to do so.

The iron and steel trade of Great Britain have had Mr. Heaton's invention before them for 12 months, and they have had mine before them for nearly 12 years, and I have no doubt they are well acquainted with both; but they have not rushed in a body to buy up or even to take licences under Mr. Heaton's patent, as one would have supposed men would do who are so keenly alive to anything, in these bad times, if it possessed all the advantages now claimed for it. My licences, however, are going on as usual, and I am irresistibly led to the conclusion that the iron and steel trade really know what is best for them, and what to use and what to avoid, in spite of all the testimonials of experts and theoretical scientific writers.

I have now arrived at the end of a painful task, for I have ever felt the strongest possible dislike to write publicly on matters connected, however slightly, with my own business; but I have felt imperatively called upon in this instance to place the foregoing facts before the public, and, having done so, I desire to have no further discussion on the subject. HENRY BESSEMER.

Denmark Hill, Dec. 18.

THE BESSEMER PATENT.

SIR,—A few days ago a letter from Mr. Bessemer appeared in the City Article of the *Times*, in which the validity of a patent granted to Mr. Heaton for a process of manufacturing steel was impugned. The specifications of patents are, like Acts of Parliament, rarely unassailable; and probably an objection might be taken to Mr. Bessemer's own patent right on the following technical ground. In the earliest and most important of Mr. Bessemer's patents, dated Oct. 17, 1856, and Dec. 5, 1855, respectively, the blowing of air or steam separately or conjointly through molten pig-iron in order to convert it into malleable iron or steel, is distinctly claimed. Now, air will produce the effect, but steam will not, at least in the manner described by Mr. Bessemer. But, if one or more methods of attaining a given result appear in a specification, and anyone will not accomplish the object, the patent is *ipso facto* invalid in law. The law, however, very justly prescribes a remedy for the defect, and that is entering a disclaimer with respect to the method or methods which will not succeed. That course Mr. Bessemer never took; but, instead thereof, he obtained another patent, dated Feb. 12, 1856 in which he claimed the use of air alone. This was, in fact, re-patenting part of a previous patent; and the question, therefore, arises whether such a proceeding is good in law, and is to be held as a legal substitute for a disclaimer. As the point is one of considerable interest and importance to inventors, you may possibly be disposed to publish this letter. I may add that I was curious enough to obtain the written opinion on the subject of one of the most eminent counsel in Patent Law, and here it is:—"If one of two methods of attaining a given result fail, the patent is bad for insufficient specification, as misleading the public and not disclosing a successful practical invention. One of the earliest cases illustrating this is 'Turner *v.* Winter,' decided by Buller in 1787; a modern case is Stevens *v.* Keating,' decided by Chief Baron Pollock in the full Court. The Bessemer patent is in peril upon the fact as stated by you."

I have had this opinion during several years in my possession, and should pro-

bably have never disclosed it unless Mr. Bessemer had himself appeared as an expositor of Patent Law, and vigorously attacked a brother patentee.
Dec. 21. OBSERVER.

FOREIGN MINING AND METALLURGY.

The imports into France of pig-iron and plates during the first ten months of this year compare as follows with the imports in the corresponding period of 1867:—

	1868.		1867.
Pig—free of duty ..... Tons	79,396	.....	44,085
Ditto, for shipbuilding purposes	1,314	.....	998
Ditto, with payment of duty	15,268	.....	73,307
Total	95,971		118,390
Iron and plates—free of duty	44,010	.....	53,748
Ditto, for shipbuilding purposes	9,998	.....	3,287
Ditto, with payment of duty	1,783	.....	9,358
Total	55,791		59,393

The whole of the exports by warrants of pig, iron, and plates, from France, were 127,689 tons in the first ten months of this year, as compared with 102,364 tons in the corresponding period of 1867. The direct exports of pig, iron, and plates from France in the first ten months of this year were 10,334 tons, against 13,919 tons in the correponding period of 1867. It is of some interest to follow the details of the imports of minerals into France in the first ten months of this year, as compared with the corresponding period of 1867:—

Source of supply.	1868.		1867.
Belgium ..... Tons	82,283	.....	113,741
German Association	79,962	.....	56,341
Spain	61,934	.....	50,092
Kingdom of Italy	69,696	.....	67,441
Switzerland	3,409	.....	5,254
Algeria	181,669	.....	152,732
Other countries	1,055	.....	541
Total	479,008		446,132

There has thus been a sensible increase in the imports of minerals this year into France—a sign of the amelioration which has taken place in the state of French metallurgical industry. The Northern of France Railway Company has ordered 39 tons of iron Vignoles rails, from MM. René, Hamoir, and Co., at 7*l.* 2*s.* per ton, in warehouse at the works. The Eastern of France Railway Company has ordered 1000 tons of fish-plates from Leclerc, of Trith St. Leger, at 7*l.* 19*s.* 4*d.* per ton. The Northern of France Railway Company has ordered 11 tons of chairs, at 5*l.* 0*s.* 10*d.* per ton, from the house of Hamoir. The Charentes Railway Company has ordered 230 tons of fish-plate bolts, at 15*l.* 2*s.* 6*d.* per ton. The Northern of France Railway Company has ordered from M. Roussel the ironwork of an iron girder bridge, proposed to be erected near Calais, at 16*l.* 15*s.* 6*d.* per ton. The same company has also ordered some tons of cast-iron conduit-pipes, at 6*l.* 7*s.*, 6*l.* 10*s.* 6*d.*, 6*l.* 19*s.* 3*d.*, 7*l.* 14*s.* 6*d.*, and 8*l.* 3*s.* 4*d.* per ton, in warehouse, at Laon. A report of the French Committee of Forgemasters observes that the abundance of employment now assured to the various works, and the rise in sale prices, explains, to a certain extent, the attitude of abstention, assumed by the French railway companies, whose orders are never given out with freedom, except at periods of depression and low prices.

Advices from Essen state that the low rates current for Bessemer steel rails in that district have excited the most bitter complaints on the part of Prussian industrials. Thus, at an adjudication for the Lower Silesian (Markisch and Berlin) Railway, Herr Krupp, of Essen, undertook to supply Bessemer cast-steel rails at 14*l.* 6*s.* 6*d.* per ton. The manufacture of steel is attracting more and more attention among Prussian industrials. Thus, it is announced that the New Scotland Company is about to occupy itself with the production of cast-steel; this society has for some time produced with success puddled steel rails.

The productive powers per annum of the Belgian rolling-mills, making rails, are estimated as follows:—

Works of the Syndicate.	Tons.
Sclessin	18,000
Châtelineau	15,000
Couillet	15,000
Monceau	15,000
Thy-le-Château	18,000=81,000
Indedendent works:—	
MM. de Dorlodot, at Acoz	25,000
Cockerill Company	18,000
Montigny Company	15,000=58,000
General total	139,000

This production represents, at a minimum rate of 5*l.* 12*s.* per ton, a value of 800,000*l.* per annum. It is especially abroad that Belgium has to seek to dispose of her rails; thus, in 1867, the exportation of rails from Belgium attained a total of 81,000 tons, of which 65,000 tons went to Russia. Contracts have this year been concluded for Russia, Hungary, and Roumania. Roumanian railways will take from Belgium 37,500 tons, of which the Cockerill Company will supply 22,500 tons; the works of the Syndicate, 8000 tons; and the Montigny Works, 7000 tons. These contracts are definitive. The contracts in course of negociation for Hungarian railways are not yet completely ratified; they have the same importance as those concluded for Roumania, but they are otherwise divided—12,500 tons to the Cockerill Company, 17,000 tons to the Syndicate, and 8000 tons to the Montigny Works. What stops the definitive conclusion of the Hungarian contracts is the fact that the rails must, according to the specifications prepared, be approved and accepted by the Hungarian Government; and it appears that the Hungarian Government cannot come to any decision on the subject until a Commission appointed by it has made a report on the manufacture of rails in Belgium. The whole of the contracts obtained for Hungary (35,000 tons) have, then, been secured only conditionally. The same suspensive condition applies to a contract for 11,000 tons of rails, recently concluded by MM. de Dorlodot, for the Lemberg and Czernowitz Railway. The house of de Dorlodot has also taken a contract for 3000 tons of rails for Italy. The export orders on hand in Belgium, as regards 1869, may, then, be summed up thus:—

	Definitive.		Conditional.
Syndicate ..... Tons	8,000	.....	17,000
Cockerill	22,500	.....	12,500
Montigny	7,000	.....	8,000
De Dorlodot	3,000	.....	10,500
Total	40,500		48,000

As the production of the works in 1869 may be set down at 140,000 tons, it follows that full work for the great Belgian metallurgical establishments is by no means assured for the whole of next year. Under these circumstances, some doubts are expressed as to the prudence of an advance in prices on the part of the Belgian works, more especially as an English house has contracted for rails for the Lemberg and Czernowitz Railway at 6*l.* 4*s.* per ton, free at Middlesborough; while another English house has contracted for rails for the Tambow and Saratow (Russia) Railway, at 6*l.* per ton, delivered at the port of embarkation. A contract for from 15,000 to 18,000 tons of rails will, it is stated, be shortly let at Florence. The exports of coal from Belgium in the first nine months of this year amounted to 2,608,393 tons, as compared with 2,539,580 tons in the corresponding period of 1867, and 2,872,234 tons in the corresponding period of 1866. At the close of September there was thus still a falling off in the exports of about 264,000 tons, as compared with the corresponding period of 1866; and although the condition of the Belgian coal markets has sensibly improved since September, it seems probable that the year's exports will close without attaining the total reached in 1866. The results as regards coke are nearly the same in each of the three years, the total exports being 391,289 tons in the first nine months of 1868, as compared with 402,796 tons in the corresponding period of 1867, and 408,712 tons in the corresponding period of 1866. During the last few days the demand for Belgian coal has experienced rather a sensible check, but this state of things has not prevented the prices of some descriptions acquiring greater firmness, especially in the Charlerol basin. This is, perhaps, attributable to the diminution which has taken place of late in stocks in Belgium. The Charlerol Coal Association has informed its members that, in consequence of an understanding arrived at between the administration of the Belgian State railways and the General Railways Working Company, a new tariff has been applied to the the conveyance of coal from the Charlerol basin as far as Moascron, and as far as the French frontier, *via* Baisieux.

TO ENTERPRISING CAPITALISTS.—A Gentleman, of great experience in a commercial point of view, having travelled the Globe over, and also purchased and shipped largely on his own account to Foreign Markets, discovered an ARTICLE of VAST CONSUMPTION, which will be a boon to the human race. A similar article has returned to the owners over two millions in a few years. In consequence of the unsettled state of the Money Market, since May, 1866, he has kept quiet, improving on the discovery, by sending samples to cold and warm climates, to test its preservation, and is now READY to TREAT with CAPITALISTS for a PORTION, and bring it before the public. He has the patronage of crowned heads, also the promises of large shipping orders. The strictest enquiries, with references, must be made on each side. To save trouble, none but *bona fide* parties, or their solicitors, will be treated with.
Apply, by letter only, addressed "Universal," MINING JOURNAL Office, 26, Fleet-street, London, E.C.

SAFETY FUSE.—Messrs. WILLIAM BRUNTON AND CO., PENHALLICK, POOL, near CAMBORNE, CORNWALL, and BRYMBO, near WREXHAM, MANUFACTURERS OF FUSE, of every size and length, as exhibited in the Great Exhibition of 1851, and supplied to the Royal Arsenal at Woolwich, the Arctic Expedition, and every part of the globe.
For the convenience of their customers and others in the North, W. BRUNTON and Co. have recently erected a branch manufactory at Brymbo, near Wrexham, where, as at Cornwall, they are at all times PREPARED to EXECUTE UNLIMITED ORDERS for SUPPLYING FUSE, upon warrant that it will prove equal to, if not better than, any to be procured elsewhere.

SIX POUNDS PER WEEK
While laid up by injury, and
ONE THOUSAND POUNDS IN CASE OF DEATH CAUSED BY ACCIDENT OF ANY KIND,
May be secured by an annual payment of from £3 to £6 5*s.*
TO THE
RAILWAY PASSENGERS' ASSURANCE COMPANY.
RAILWAY ACCIDENTS ALONE
May also be provided against by insurance tickets for single or double journies.
For particulars, apply to the Clerks at the Railway Stations, to the Local Agents, or at the
OFFICES,—64, CORNHILL, and 10, REGENT STREET, LONDON.
W. J. VIAN, Sec.

Contract for Coals for Portsmouth Dockyard Extension Works.
CONTRACT DEPARTMENT, ADMIRALTY, SOMERSET HOUSE.
THE COMMISSIONERS for Executing the Office of Lord High Admiral of the United Kingdom of Great Britain and Ireland, do hereby give notice that on TUESDAY, the 5th of January next, at Two o'clock, they will be READY to TREAT with such persons as may be WILLING to CONTRACT for SUPPLYING and DELIVERING at the Portsmouth Dockyard Extension Works,
FOUR THOUSAND TONS OF COALS FOR BRICKMAKING,
And NINE HUNDRED TONS OF COALS FOR LAND ENGINES.
A form of the tender and conditions of contract may be seen in the lobby of the Storekeeper-General's Department, Admiralty, Somerset House. No tender will be received after two o'clock on the day of treaty, nor will any be noticed unless the party attends, or an agent for him duly authorised in writing.
Every tender must be addressed to the secretary of the Admiralty, and bear in the left-hand corner the words "Tender for Coals for Portsmouth," and must also be delivered at the Department of the Storekeeper-General, Admiralty, Somerset House, accompanied by a letter signed by two responsible persons, engaging to become bound with the person tendering in the sum of £25 per cent. on the value for the due performance of the contract. By order,
ANTONIO BRADY,
Registrar of Contracts and Public Securities.
Contract Department, Admiralty, Somerset House, Dec. 15, 1868.

Contract for Coals for Halifax.
CONTRACT DEPARTMENT, ADMIRALTY, SOMERSET HOUSE.
THE COMMISSIONERS for Executing the Office of Lord High Admiral of the United Kingdom of Great Britain and Ireland, do hereby give notice that on TUESDAY, the 12th of January next, at Two o'clock, they will be READY to TREAT with such persons as may be WILLING to CONTRACT for SUPPLYING and DELIVERING into store at Her Majesty's Naval Yard at Halifax, Nova Scotia,
FOUR THOUSAND TONS OF SMOKELESS SOUTH WALES COALS,
Fit for the service of Her Majesty's steam-ships and vessels.
A form of the tender and conditions of contract may be seen in the lobby of the Storekeeper-General's Department, Admiralty, Somerset House. No tender will be received after Two o'clock on the day of treaty, nor will any be noticed unless the party attends, or an agent for him duly authorised in writing.
Every tender must be addressed to the Secretary of the Admiralty, and bear in the lefthand corner the words "Tender for Coals for Halifax," and must also be delivered at the Department of the Storekeeper-General, Admiralty, Somerset House, accompanied by a letter signed by two responsible persons, engaging to become bound with the person tendering in the sum of £25 per cent. on the value for the due performance of the contract. By order,
ANTONIO BRADY,
Registrar of Contracts and Public Securities.
Contract Department, Admiralty, Somerset House, Dec. 15, 1868.

Sale of Engines, &c.
CONTRACT DEPARTMENT, ADMIRALTY, SOMERSET HOUSE.
THE COMMISSIONERS for Executing the Office of Lord High Admiral of the United Kingdom of Great Britain and Ireland, do hereby give notice that on TUESDAY, the 5th of January next, at Two o'clock, they will be READY to RECEIVE SEALED TENDERS for the PURCHASE of the ENGINES, SPARE GEAR, &c., taken from H.M. ships, "Comet" and "Cygnet," and lying in Portsmouth Dockyard.
Persons wishing to become purchasers must apply to the Admiral-Superintendent, H.M. Dockyard, Portsmouth, for notes of admission to view the engines, &c.
Catalogues and conditions of sale may be obtained here, and at Portsmouth Dockyard.
No tender will be received after Two o'clock on the day of treaty. It will not be necessary for parties tendering to attend on that day, as the result will be communicated to them in writing.
Every tender must be addressed to the Secretary of the Admiralty, and bear in the lefthand corner the words "Tender for Engines of 'Comet' and 'Cygnet,'" and must also be delivered at the Department of the Storekeeper-General, Admiralty, Somerset House. By order,
ANTONIO BRADY,
Registrar of Contracts and Public Securities.
Contract Department, Admiralty, Somerset House, Dec. 15, 1868.

Tower—Sale of Stores.
BY ORDER OF THE SECRETARY OF STATE FOR WAR.
MR. GEORGE SPILLMAN WILL SELL, BY PUBLIC AUCTION, in the Tower, on Tuesday, the 12th of January, 1869, at Eleven o'clock in the forenoon precisely, the following STORES:—

BEDDING.	HAVERSACKS.	BRASS.
TIN SHEETS.	MUSQUET STOCKS.	IRON.
ACCOUTREMENTS.	ENGINE HOSE.	TOOLS.

May be viewed at the Tower from Ten to Four o'clock the three days previous to the day of sale, and catalogues may be had at the War Office, Pall Mall; the Tower; and the Royal Arsenal, Woolwich.

TO CAPITALISTS.
SLATE QUARRIES FOR SALE IN NORTH AND SOUTH WALES.
MR. GEO. A. H. POTTER has FOR SALE, BY PRIVATE TREATY, FOUR VALUABLE SLATE QUARRIES, called
FOEL FAWR, FOEL FACH, CWM CILAN, AND LLYFNANT,
Situate in the Counties of CARDIGANSHIRE and MONTGOMERYSHIRE.
They are in the immediate vicinity of the railways, shipping wharves, and rivers. Plenty of water to turn any machinery required.
A vein of copper ore runs through a portion of the Foel Fawr property.
For full printed particulars, and to treat, apply to GEO. A. H. POTTER, Auctioneer and Valuer, 17, Orange-street, Swansea.

SORTRIDGE CONSOLS MINING COMPANY.—The Committee of Management hereby give notice that they will RECEIVE TENDERS at the offices of the company, as under, until Tuesday, the 29th instant, from PARTIES who may be willing TO PURCHASE the WHOLE or any PART of the STEAM ENGINES and other MACHINERY and MATERIALS, now on the
SORTRIDGE CONSOLS MINE,
Near TAVISTOCK, DEVON.
The MACHINERY includes a 40 in. cylinder PUMPING ENGINE, with ONE BOILER.
A 22 in. cylinder ROTARY ENGINE, with ONE BOILER.
A WATER WHEEL, 24 ft. by 2½ ft., with hauling machine attached.
CRUSHER, DRAWING MACHINE, and 150 fms. 11 in. capstan rope.
The whole are in good working condition, and may be inspected on application to Capt. ROBERT JACKSON, at the mine.
Inventories may be seen at the mine, and at the London office.
2, Church-court, Clement's-lane, Lombard-street, London, E.C., December 11, 1868. DAVID COHEN, Purser and Secretary.

TO BROKERS AND CAPITALISTS.
TO BE DISPOSED OF, BY PRIVATE TREATY, one of the finest and most promising LEAD MINING PROPERTIES, held on lease, in NORTH WALES. The money spent in opening the works is very considerable, and any party purchasing will have all the advantage of a large expenditure on permanent works.
Plans and sections, showing the works already done in the property, may be seen and examined; and further information may be obtained on application to Mr. J. HAWLEY EDWARDS, Solicitor, Shrewsbury.—Dec. 15, 1868.

TO BE SOLD, BY PRIVATE CONTRACT, upon most favourable terms, the LEASE of an ANTHRACITE COLLIERY in the County of CARMARTHEN, with the VALUABLE PLANT, MACHINERY, and MATERIALS.
Apply to WALTER JUSTICE, Esq., Solicitor, No. 6, Bernard-street, Russell-square, W.C.

NORTH WALES—QUEEN'S FERRY, FLINT.
CLOSE TO THE RAILWAY.
TO BE SOLD OR LET, DESIRABLE FREEHOLD MANUFACTURING PREMISES, with ENGINE-POWER and LAND.—A plot of about one acre, with substantial factories, engine-house chimneys, stable, outbuildings, and sheds, suitable for any manufacturing purpose. ENGINE of most recent construction, and BOILER nearly new.
For further particulars, apply to JOHN TEMPLE, 32, Redcross-street, Liverpool.

TO LET, the COALS under about 175 ACRES of LAND near to the WIGAN COAL FIELD, in the township of LOSTOCK. The Arley is between 70 and 80 yards deep. The Lancashire and Yorkshire Railway runs through the estate.
For particulars, apply to Mr. MURRAY, Valentine Cottage, Blackley, Manchester.

ENGINES FOR SALE.
FOR SALE, ONE 54 in. cylinder PUMPING ENGINE, 9 feet stroke, equal beam, with or without TWO 12 ton BOILERS.
Also ONE 36 in. PUMPING ENGINE, 9 ft. stroke, with or without a 10 ton BOILER. With an addition of ONE 8 ton BOILER also FOR SALE. To be sold cheap.
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FOR SALE,—A FIRST-CLASS SECONDHAND 8-horse power PORTABLE STEAM-ENGINE, of recent construction, by eminent makers.
NEW PORTABLE STEAM-ENGINES, from 5 to 25-horse power, of the highest order, on advantageous terms. Prize Medals awarded—Hamburg, 1863; Paris, 1867.
Apply to BARROWS and STEWART (late Barrows and Carmichael), Engineers, Banbury.

RAILWAY WAGON WORKS, BARNSLEY.
MESSRS. G. W. AND T. CRAIK
ARE PREPAR TO
SUPPLY COAL AND COKE WAGONS
OF EVERY DESCRIPTION,
Either for cash, or by deferred payments through wagon-leasing companies.
WAGONS PROMPTLY REPAIRED.

TANK LOCOMOTIVES,
FOR SALE OR HIRE.
HENRY HUGHES AND CO.,
LOUGHBOROUGH.

THE BEVERLEY IRON AND WAGON COMPANY
(LIMITED),
MANUFACTURERS OF RAILWAY WAGONS, WHEELS AXLES, LORRYS, CARTS, WOOD WHEELS, &c.,
IRONWORKS, BEVERLEY, YORKSHIRE.

TO COLLIERY PROPRIETORS.
UPWARDS of 6000 LARCH, 4000 OAK POLES, 100 OAK and OAK PLANKS upwards of 20 feet long; ELM COAL-PIT RINGS, ready cut, in stock.
All kinds of ENGLISH TIMBER supplied in the round, and OAK and LARCH SCANTLING cut to sizes for railway and coal-wagon building.
Dealer in all kinds of BRITISH TIMBER.
MILLWRIGHTS, ENGINEERS, COACH BUILDERS, WHEELWRIGHTS, &c., supplied on the most reasonable terms.
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No. 63, GRANBY ROW, MANCHESTER.

F. N. GISBORNE'S PATENT MECHANICAL BALANCE-WEIGHT SIGNALS FOR MINES, &c.
THESE SIGNALS supply a want long felt in giving INSTANT COMMUNICATION in MINES at SEVERAL PLACES at the SAME TIME without the aid of electricity, but by a single rod or chain; so that a degree of safety is ensured hitherto unknown.
The price is also very low, and the mechanism so simple that any ordinary mechanic could put it in order if out of adjustment.
The same patent, as applied to ships, has received the approval of the Chief Engineer, Chatham Dockyard (vide *Times*, Aug. 13, 1868).
SOLE AGENT FOR MINERS:
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N.B.—Mr. JERRAM is now visiting the different mines with working models.

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B. DONKIN & CO.
Are now making their PATENT HORIZONTAL STEAM ENGINES, by which great ECONOMY OF FUEL is attained, the price being at the same time very moderate for this class of engine.
These engines have been accurately tested as to consumption of fuel, and have been sufficiently long at work to prove their durability and efficiency.
Employers of steam power can have their engines easily tested by a simple and inexpensive apparatus, by which the comparative consumption of steam is ascertained, irrespective of the difficult questions of evaporative power of boilers and quality of fuel.
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B. DONKIN & CO., ENGINEERS' WORKS,
BERMONDSEY, LONDON, S.E.

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THE SUBSCRIBER expects shortly at LONDON a PARCEL of the above, and also a FIRST CONSIGNMENT of YELLOW OXIDE of ANTIMONY. Samples on application.
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MAKERS OF ZINC OXIDE.
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The Directors beg to intimate to PAINT and COLOUR MAKERS, INDIA RUBBER MANUFACTURERS, SHIPPERS, and the TRADE generally, that they have COMPLETED the ERECTION of WORKS for the MANUFACTURE of ZINC OXIDE, and that they are now producing ZINC WHITE of GREAT EXCELLENCE and PURITY.
Samples and terms shall be forwarded on application.
H. C. FOWLER, Secretary.
29, Westmoreland-street, Dublin, December 10, 1868.

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THE TAVISTOCK FOUNDRY, IRONWORKS AND HAMMER MILLS,
which have been carried on for more than half a century by
MESSRS. GILL AND CO.,
and obtained a
HIGH REPUTATION FOR
SHOVELS AND OTHER TOOLS
as well as for
ENGINEERING AND FOUNDRY WORK,
have been purchased by
MESSRS. NICHOLLS, MATHEWS, AND CO.,
BEDFORD IRONWORKS, TAVISTOCK.
For thirty years Messrs. NICHOLLS, MATHEWS, and Co., have been the proprietors of the latter works, but are now about to remove to the
TAVISTOCK FOUNDRY,
where, having the advantage of a never-failing stream of water of upwards of 200-horse power, they will have increased facilities for speedily and satisfactorily executing all orders entrusted to them.
Address,—
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IMPROVED PNEUMATIC TUNNELLING ENGINE.
THE PROPRIETORS of this INVENTION, in order to bring its CAPABILITIES more prominently before the PUBLIC, are OPEN to TAKE CONTRACTS for DRIVING LEVELS.
Preference will be given to ADIT LEVELS and those places where ROTATORY MACHINERY is in use, and can be applied to driving the AIR COMPRESSOR.
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With which is incorporated the
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CHIEF OFFICES,—
101, CHEAPSIDE, AND 335, STRAND, LONDON.
SPECIAL ADVANTAGES TO ASSURERS.
The entire profits divided amongst the holders of participating polices.
The profits applied—first, in extinguishing the premiums at a given date, and afterwards in making the policy payable during life; this important advantage being secured without the payment of any additional premium.
No claim can be litigated or disputed, except with the consent of the members present at a general meeting, to be specially convened for the occasion.
According to the half-credit system, one-half of the first five annual premiums may remain as a charge upon the policy, the half premiums for which credit is given being (on participating policies) gradually liquidated out of the profits.
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This popular Treatise, revised and improved, contains a series of tables on weight and measurement of metals, stone, and timber; gross and net sectional areas of angle-irons; strength of materials; Government chain and anchor tests; tests of iron and steel from different makers; boiler making, forging, iron rolling, cog-wheel pattern making, moulding, &c. Also articles on girder making, pile driving, and all matters connected with practical engineering and smiths' work, verified in most cases by the actual experience of the author.
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THE TURBINE.

MAC ADAM BROTHERS AND CO., ENGINEERS, SOHO FOUNDRY, BELFAST, after twenty years of experience, have brought their IMPROVED TURBINE to great perfection.

It is applicable to all practicable heights of fall, giving much greater power from the water than any other kind of water-wheel.

On low falls it has the great advantage of not being impeded by floods or backwater.

It is particularly well adapted for situations where the quantity of water is variable, and where all other wheels fail.

Its motion is extremely regular, and, when desired, a governor can be applied effectively.

This wheel is at work in a great many places, to which reference will be given.

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CHESTS, DOORS, AND STRONG ROOMS,

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PATENT SAFETY LAMPS,

Which have been proved INEXPLOSIVE in the highest obtainable current of gas, of 48 ft. per second. No. 1 weighs 24 ozs., is simple in its construction, burns with a steady and nearly uniform flame in moderate currents, gives a good light, and is in every respect a practicable lamp. Price, 9s. each; if in quantities of a dozen or upwards, 8s. 6d. each, delivered free. Orders received by—

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MANUFACTURER OF MINING AND SURVEYING INSTRUMENTS,
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Price List on application.
STERNE'S PATENT PNEUMATIC SPRINGS FOR COAL CAGES.
Price £8 10s. per set of four.

IN THE TOWER FOUNDRY IS THE TYNE DEPOT FOR MACHINERY of every description for WOOD and IRONSTONE, CORN-CRUSHING, and PUG MILLS. Also, AGRICULTURAL IMPLEMENTS.

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PURCHASERS of PORTABLE ENGINES and STEAM CRANES will do well to ask G. HARLE'S price for the same.

STEAM-BOILERS made by WILLIAM WILSON, LILYBANK BOILER WORKS, GLASGOW, on the most improved principles, for home and export. All boilers made of the best material and workmanship, proved and warranted tight under a high pressure, and delivered at any railway station or shipping port in the kingdom at moderate rates. Lithograph of boilers forwarded post-free on application.

TO MANUFACTURERS OF YELLOW METAL, MERCHANTS, AND OTHERS.

CAUTION.

WHEREAS, it has recently come to the knowledge of the directors of ELLIOTT'S PATENT SHEATHING AND METAL COMPANY (LIMITED) that quantities of YELLOW METAL made by other Manufacturers have been exported to India and elsewhere, bearing a FRAUDULENT IMITATION of the exclusive BRAND or TRADE MARK of the company for Metal of that description—namely, a representation of a Rupee, with or without the word "soft" printed thereunder,

NOTICE IS HEREBY GIVEN, that in case any manufacturer, or other person, shall STAMP, IMPRESS, or AFFIX to or on any YELLOW METAL not made by the said company, the said BRAND or TRADE MARK, or any colourable imitation thereof,—or in case any merchant or other person shall EXPORT or SELL any such Yellow Metal so marked as aforesaid,—PROCEEDINGS will forthwith be COMMENCED against such manufacturer, merchant, or other persons, to RESTRAIN him or them from such wrongful acts as aforesaid, and RECOVER DAMAGES in respect thereof.

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MANUFACTURERS OF EVERY DESCRIPTION OF IMPROVED

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From the very best quality of charcoal iron and steel wire.

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HIPS' RIGGING, SIGNAL AND FENCING STRAND, LIGHTNING CONDUCTORS, STEAM PLOUGH ROPES (made from Webster and Horsfall's patent steel wire), HEMP, FLAX, ENGINE YARN, COTTON WASTE, TARPAULING, OIL SHEETS, BRATTICE CLOTHS, &c.

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MESSRS. NICHOLLS, MATHEWS, AND CO. have FOR SALE ENGINES of VARIOUS SORTS and SIZES, AND SEVERAL GOOD TEN TON BOILERS. All are in excellent condition, and well worthy the attention of purchasers. Also, a WATER WHEEL, 35 ft. diameter, 3 ft. 2 in. breast, with iron axle, complete; and one 12 head STAMPS, axle, stands, frames, 12 heads of stamps, iron lifters, and two driving-wheels, complete.

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Assays and analyses of every description of mineral and other substances manures, &c.

Gentlemen going abroad for mining purposes instructed in assaying, and the most improved methods of reducing gold, silver, and other metals.

MINING PROPERTIES INSPECTED AND REPORTED ON.

NOTICE TO INVESTORS.

STATISTICS OF THE MINES OF CORNWALL AND DEVON WITH OBSERVATIONS UPON THEM.

I beg to inform the public that my work, under the above title, for 1869, will be published early in January, and will contain the following particulars, viz.:—The geological position, present prospects, names of purser, manager, and secretary, with statement of the annual returns of each mine during the last ten years, and of dividends paid to the present time.

This work will show with completeness and explicitness a variety of particulars not afforded in any other publication, but which it is important, especially for investors, to know—such as depth of mine, hands employed, returns, length of time at work, &c.

Only a limited number of copies will be issued. THOMAS SPARGO.

Subscribers' names will be received at my office, 224 and 225, Gresham House, Old Broad-street, London, E.C., and at the office of the MINING JOURNAL.

HEALTH AND MANLY VIGOUR.—A Medical Man, of Twenty Years' experience in the treatment of Nervous Debility, Spermatorrhœa, and other affections which are often acquired in early life, and unfit sufferers for marriage, and other social duties, has published a book giving the FULL BENEFIT of his LONG EXPERIENCE, GRATIS, with plain directions for the recovery of health and strength. A single copy sent to any address on receipt of one stamp.

Address to the "Secretary," Institute of Anatomy, Birmingham.

IMMENSE SAVING OF LABOUR.

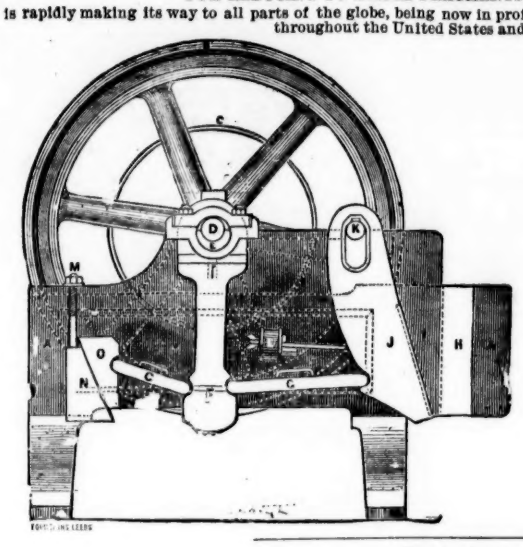
TO MINERS, IRONMASTERS, MANUFACTURING CHEMISTS, RAILWAY COMPANIES, EMERY AND FLINT GRINDERS, McADAM ROAD MAKERS, &c., &c.

BLAKE'S PATENT STONE BREAKER,

OR ORE CRUSHING MACHINE,

FOR REDUCING TO SMALL FRAGMENTS ROCKS, ORES, AND MINERALS OF EVERY KIND.

It is rapidly making its way to all parts of the globe, being now in profitable use in California, Washoe, Lake Superior, Australia, Cuba, Chili, Brazil, and throughout the United States and England. Read extracts of testimonials:—



The Parys Mines Company, Parys Mines, near Bangor, June 6.—We have had one of your stone breakers in use during the last twelve months, and Captain Morcom reports most favourably as to its capabilities of crushing the materials to the required size, and its great economy in doing away with manual labour.
For the Parys Mining Company, JAMES WILLIAMS.
H. R. Marsden, Esq.

Ecton Emery Works, Manchester.—We have used Blake's patent stone breaker made by you, for the last 12 months, crushing emery, &c., and it has given every satisfaction. Some time after starting the machine a piece of the moveable jaw s about 20 lbs. weight, chilled cast-iron, broke off, and was crushed in the jaws of the machine to the size fixed for crushing the emery.
H. R. Marsden, Esq. THOS. GOLDSWORTHY & SONS.

Alkali Works, near Wednesbury.—I at first thought the outlay too much for so simple an article, but now think it money well spent. WILLIAM HUNT.

Welsh Gold Mining Company, Dolgelly,—The stone breaker does its work admirably, crushing the hardest stones and quartz. WM. DANIEL.

Our 15 by 7 in. machine has broken 4 tons of hard whinstone in 20 minutes, for fine road metal, free from dust. Messrs. ORD and MADDISON,
Stone and Lime Merchants, Darlington.

Kirkless Hall, near Wigan.—Each of my machines breaks from 100 to 120 tons of limestone or ore per day (10 hours), at a saving of 4d. per ton.
JOHN LANCASTER.

Ovoca, Ireland.—My crusher does its work most satisfactorily. It will break 10 tons of the hardest copper ore stone per hour. WM. G. ROBERTS.

General Frémont's Mines, California.—The 15 by 7 in. machine effects a saving of the labour of about 30 men, or $75 per day. The high estimation in which we hold your invention is shown by the fact that Mr. Park has just ordered a third machine for this estate. SILAS WILLIAMS.

For circulars and testimonials, apply to—

H. R. MARSDEN, SOHO FOUNDRY,

MEADOW LANE, LEEDS,
ONLY MAKER IN THE UNITED KINGDOM.

CAUTION!

BLAKE'S PATENT STONE BREAKER,

In Chancery.

BLAKE v. ARCHER, NOVEMBER 12, 1867.

His Honour the Vice-Chancellor WOOD having found a VERDICT in FAVOUR of the PLAINTIFFS in the above Cause, establishing the VALIDITY of BLAKE'S PATENT, and made a DECREE for an INJUNCTION to RESTRAIN the DEFENDANTS, Messrs. THOMAS ARCHER and SON, of Dunston Engine-Works, near Gateshead-on-Tyne, from INFRINGING such PATENT, and ordering them to pay to the Plaintiffs the costs of the Suit.

ALL PERSONS are hereby CAUTIONED against MANUFACTURING, SELLING, or USING any STONE BREAKERS similar to BLAKE'S, which have not been manufactured by the Plaintiffs. Application will forthwith be made to the Court of Chancery for INJUNCTIONS AGAINST ALL PERSONS who may be found INFRINGING BLAKE'S PATENT after this notice.

SOLE MAKER IN ENGLAND,

H. R. MARSDEN, SOHO FOUNDRY, MEADOW LANE, LEEDS.

PARIS EXHIBITION, 1867. SILVER MEDALS, CLASSES 40—51.

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These Crucibles (MORGAN'S PATENT) *were the only ones to which Prize Medals were awarded in London*, 1862; *Dublin* 1865; *New Zealand*, 1865; *and Oporto*, 1865.

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As these crucibles last much longer than any others, it follows that the saving of metal must be great, because to each worn crucible a quantity of metal adheres. In fact, comparing these with other crucibles, the saving of *metal* and *fuel* alone is more than equivalent to *their cost*.

A are made in sizes varying from 2 ozs. to any required capacity, and are marked by the quantity of kilogrammes they will contain; thus No. 100 will contain 100 kilogrammes.
B differ in shape, but correspond in all other respects with *A*, and are similarly marked.
C are marked in English pounds—thus, a crucible marked 60 will contain 60 lbs.
D are made expressly for steel in various sizes.

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Can be made any shape or size required, and are stamped as below:—

Having secured new Patents for our Manufacture, and to prevent fraudulent Imitations,

we call particular attention to our Trade Mark, as here shown.

"It follows, with the persistence of a law, that originators should be beset by imitators, just as in the natural world the finest organic forms are most liable to parasitical growth."—Miss METEYARD'S *Life of Josiah Wedgewood, the Potter.*

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Worked direct by Steam-Engine.

These pumps work without valves or packing, and raise a considerable quantity of water. They will lift sand, mud, or grit without choking, and require only very inexpensive repairs.

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As supplied to the Admiralty Graving Docks, Malta, to lift from 200 to 2000 gallons per minute. The engine is of inverted vertical cylinder construction. The pump barrel and piston are of gun-metal, and the whole very strong and compact.

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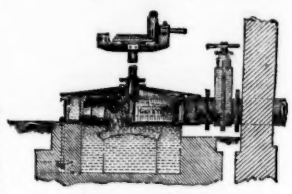
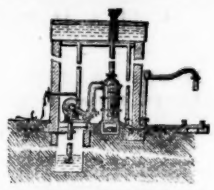
A very neat and extremely compact arrangement; will work for years without getting out of order. These pumps are peculiarly adapted for mines, for which great numbers have been supplied in situations where no other pump could be applied for want of space. They are equally adapted for use as feed-pumps, by driving them with strap from a rigger in place of the fly-wheel.



GWYNNE & CO.'S IMPROVED TURBINE WATER-WHEEL.

Compact, easy to erect, economical, simple, and perfectly adapted to all situations. Made of every power from 1 to 300 horse. These turbines are adapted for every class of work. Prices on receipt of particulars.



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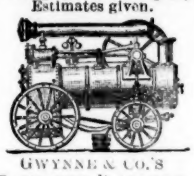
As Applied to Railway Stations.

The vertical boiler supplies the engine with steam, the pump discharging the water lifted from the well into the tank above, whence it may be drawn as occasion requires, for feeding locomotives, washing the carriages, as a fire-engine, &c. Estimates given.



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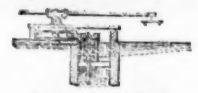
Light, simple in construction, durable, and economical, and very superior to "agricultural" engines. From 2½ to 30 horse power.

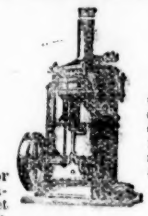
GWYNNE & CO.'S PATENTED WIND-POWER PUMPING MACHINERY.
Designed for Drainage and Irrigation Purposes

Suitable also for supplying the mansions of noblemen or gentlemen. Works continuously day and night without attention. Made from ½ to 20 horse power.



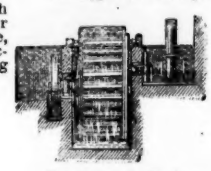
GWYNNE & CO.'S IMPROVED BULLOCK OR HORSE POWER PUMPING MACHINERY.

For situations where steam, water, or wind power are not available. Portable, easy to erect, and not liable to get out of order. From 1 to 6 horse power.



GWYNNE & CO.'S IMPROVED VERTICAL STEAM-ENGINE.

Occupies little space, compact, safe, and easy to work. Made from the very best selected materials. Of all powers from 2 to 20 horse.



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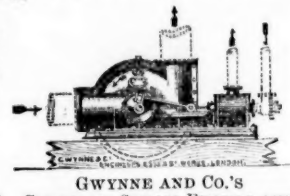

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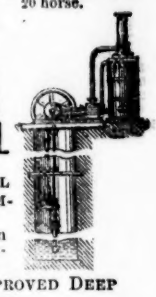
Small and powerful, low in cost, economical in work. No skilled labour required. Inexpensive foundations. First Prize Medal awarded at Paris last year for this arrangement.

GWYNNE & CO.'S IMPROVED HORIZONTAL HIGH-PRESSURE STEAM-ENGINE.

With or without expansion gear, for economical working. From 4 to 100 h. p.



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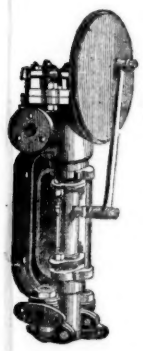

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Messrs. ALEXANDER WILSON AND CO. have received a Medal at the above Exhibition for their Improved Donkey Pumps, as being specially adapted for use on board steam vessels. These pumps are now being every day more extensively patronised by all the leading firms of Engineers, not only in the United Kingdom, but on the Continent and in our Colonies. They are the best boiler feeders yet brought before the users of steam power, and are applicable to a great variety of purposes, and in every situation where water or other fluids require to be forced.

REDUCED PRICE LIST. *Those marked * are double-acting.*

Size.	Diameter.	Stroke.	Galls. thrown per hour.	H.P. of boiler supplied.	Price.
4	1¼	2½	150	10	£ 6 10 0
5	1½	3	230	15	8 10 0
6	1⅞	4	460	30	11 0 0
7	2¼	4	600	40	13 0 0
*8	2¼	4	900	60	15 10 0
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At the Great Triennial Trials of the ROYAL AGRICULTURAL SOCIETY OF ENGLAND, held at Bury St. Edmunds, July, 1867, received the following AWARDS:—

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For Double Blast Finishing Thrashing Machine,—THE PRIZE OF £15.
Also, THE SOCIETY'S SILVER MEDAL for ADJUSTING BLOCKS for Machines.

The duty performed by all C., S., and Co.'s Engines on this occasion considerably exceeded that of any others. C., S., and Co. refer with pleasure to the fact that the duty of their "Commercial" or Single Valve Engine at Chester, so long ago as 1858, was not equalled by any "ordinary" Engine at Bury.

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PATENT FLEXIBLE TUBING,
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MANUFACTURED BY
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CARLISLE BISCUIT COMPANY.—WHOLESALE AND EXPORT BISCUIT MANUFACTURERS, CARLISLE, & 56, CITY ROAD, LONDON. For twenty years their biscuits have maintained a high reputation. For export they are specially prepared, so as to keep in any climate. To wholesale buyers a liberal discount is allowed. Price lists forwarded on application.

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MEAT BISCUIT FOR DOGS, made by the CARLISLE BISCUIT COMPANY, is undoubtedly the best and cheapest food for dogs that has ever been introduced. It is equally adapted for sporting dogs, yard dogs, or for pets. It requires no cooking, and, without any other food, keeps dogs in the highest condition. Many of the prize-taking dogs at the last Birmingham show were fed, from puppies, on this biscuit. Price 20s. per cwt. at Carlisle; or at their depôt, 56, City-road, London, 22s. per cwt. Post-office orders payable to WILLIAM SLATER, Carlisle. Sold by corn chandlers everywhere. Book of testimonials from well-known country gentlemen, sent on application. Agents wanted.
WILLIAM SLATER, Managing Director.

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ANTI-FRICTION GREASE, 10s. to 14s. per cwt.
Wire rope ditto, free from acid, 15s. per cwt. Liquid ditto (between thick and thin), for trams, &c., 8s. to 12s. per cwt.
SKIP, HUTCH, CORVE, and WAGON OILS, from 8s. to 12s. per cwt.
TORCH OIL, 1s. to 1s. 6d. per gallon.
COPPER-SPOUTED QUART LAMPS, 4s.; TORCH WICK for ditto, 6d. per lb.
PATENT ANTI-CORROSIVE BLACK VARNISH,
"Paint Substitute for Wood or Iron," ready for use, 1s. to 2s. 6d. per gallon.
We shall be glad to furnish a detailed price-list on application.
Orders by post receive prompt attention.

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Obtained the PRIZE MEDALS at the "ROYAL EXHIBITION" of 1851; at the "INTERNATIONAL EXHIBITION" of 1862, in London; at the "IMPERIAL EXPOSITION" held in Paris, in 1855; at the "INTERNATIONAL EXHIBITION," in Dublin, 1865; and at the "UNIVERSAL EXPOSITION, in Paris, 1867.

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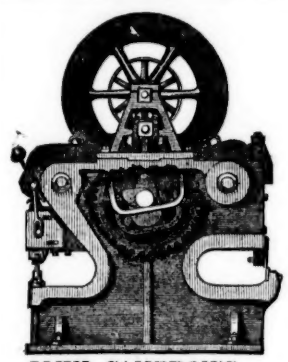

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1¼ × 1¼ in. × 24 in. = 8 tons, £185.
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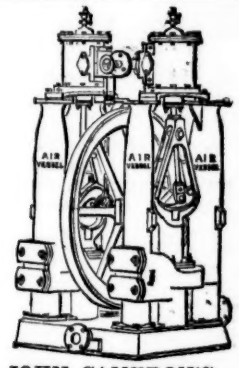

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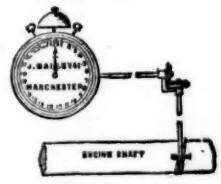

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LETTERS RECEIVE PROMPT ATTENTION.

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Parties of respectability, desirous of buying shares for future payments, can have every facility afforded them.

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TAMAR VALLEY SILVER-LEAD AND NEW CLIFFORD COPPER MINES strongly recommended. Full particulars on application.

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DESIGNS MACHINERY FOR MINES, AND
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APPRAISES MINES by the VALUE of the ORE GROUND.

ADVISES as to the APPLICATION of the BEST and MOST MODERN COMBINATIONS of MACHINERY for the PURPOSES of DRAINING, WINDING, CRUSHING, and CLEANSING ORE.

He believes in mining as a certain and scientific pursuit, not as a lottery or enigmatical theorem depending on the chapter of accidents for success.

MATTHEW FRANCIS has worked a great number of mines to a profitable issue, frequently after they had been given up by his predecessors, or worked abortively—such as Wheal Carolina Copper, in Cornwall; the Aroa Copper Mines, in Venezuela, now called the Quebrada; the Logyias and Cwmystwith Lead Mines, and the Goginan, Darren, and other Silver-Lead Mines in Cardiganshire.

MATTHEW FRANCIS maintains that if mining be treated fairly, with sufficient capital, there is no branch of industry known that produces such large and steady profits on the outlay, as witness the continued prosperity of some of the largest mining houses, established for fully half a century.

Terms for inspection of mines or designing machinery moderate; to be addressed, by note, to him at the MINING JOURNAL Office, 26, Fleet-street, London

MR. H. D. HOSKOLD,
MINING ENGINEER,
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CINDERFORD, NEWNHAM.

Gentlemen requiring reliable and correct information respecting any Coal or Iron Mine Property in the Forest of Dean may obtain it on application.

Surveys, Plans, Reports, and Valuations on the usual moderate terms.

SOUTH MERLLYN MINE COMPANY.

Consisting of 1000 Shares.

Investors and speculators will do well to read the report of Captain W. T. Harris on this mine, published to-day in these columns.

The South Merllyn sett is surrounded by numerous valuable properties, and the veins in the rock (white limestone) have invariably proved rich.

Address, for further particulars, to Mr. E. J. BARTLETT, No. 30, Great St. Helen's, London, E.C.

SOUTH CARN BREA MINE,

IN THE PARISH OF ILLOGAN, CORNWALL.

Divided into 5000 shares.

TO BE CONDUCTED ON THE COST BOOK PRINCIPLE.

A Committee of Management to be chosen from the first general meeting.

This mine is situated in the parish of Illogan, and is bounded on the north by he celebrated Carn Brea Mines; south, by North Basset; south west, by West Basset; and east, by Wheal Uny. It was suspended in June, 1866, when the price of tin had reached its lowest price, £42 10s. per ton; the loss, nevertheless, n the last six months' working was only £6; at the present price of tin, £60 per on, a profit of over £300 would have been the result.

The engine-shaft is sunk to the depth of 136 fathoms, and the mine is dry to the 85 fat hom level, about 50 fathoms have to be drained to reach the bottom, which would take four or five months to accomplish. In the meantime returns of tin could be made from the ground left standing above the 85 fathom level.

The reports, by agents who inspected the mine before the water was let in, shew that the north part of the lode, from the 118 to the 128, is standing entire, and is worth about £20 a fathom. This point alone shews a large reserve of tin ground discovered, which, with the present price of tin, can be worked at a good profit.

Adjoining this mine, to the east, is Wheal Uny, and the workings are on the same lode that is there producing such large quantities of tin; a very important feature is, that the shaft is now sunk to the depth, 130 fathoms, at which a marked improvement took place in the quality of the tin ore at Wheal Uny, and where, as the reports shew, there is a similar improvement in South Carn Brea.

The machinery and plant have remained undisturbed on the mine, and comprise a pumping-engine, with pitwork to the bottom of the shaft; a winding-engine, a stamping engine with 68 heads of stamps attached; dressing-floors, laid out with all the improved apparatus for returning tin; burning-house, smiths' and carpenters' shops, and everything necessary for extensive working.

These are to be taken over by the company at a valuation, each party chosing a valuer, and in case of their differing, a third to be called in to decide. The sum, thus agreed on, to be paid in four equal quarterly instalments.

Application for shares to be made either to Messrs. WATSON BROTHERS, 1, St. Michael's Alley, Cornhill, London, or to Messrs. R. H. PIKE and SON, Camborne.

The mine is divided into 5000 shares, of which nearly one-half are already applied for.

It is proposed to make a call of 5s. per share at the first meeting, and it is confidently expected that about 20s. per share, will be sufficient to bring the mine into a profitable state.

A detailed prospectus with reports will be forwarded on application.

OWM DWYFOR (NORTH WALES) COPPER AND SILVER-LEAD MINES COMPANY (LIMITED),

INCORPORATED UNDER THE COMPANIES ACTS, 1862 AND 1867,

Capital £12,500, in 12,500 shares of £1 each,
Fully paid-up on allotment.

BANKERS.
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OFFICES.
ST. CLEMENT'S HOUSE, ST. CLEMENT'S LANE, LONDON, E.C.

Applications for shares in this remarkable mine, for prospectuses, and forms, and notices of the mine, its geological and mineral character, and extraordinary physical advantages, may be addressed to the secretary, at the offices of the company, where also specimens of the ores can be seen.

THE MINING ASSOCIATION (LIMITED)

Are prepared to receive applications for shares in the

EAST JAVALI AND PAVON GOLD AND SILVER MINING COMPANY

(LIMITED),

To be Incorporated under the Companies Acts, 1862 and 1867.

Capital £20,000, in 8000 shares of £2 10s. each,

Of which 4000 are intended to be issued, as fully paid up, to the venders; but such shares to participate in dividends to the extent only of what may for the time being be paid up on the other shares. Five shillings per share on the other 4000 shares to be paid on application, and 15s. on receipt of advice that the purchase has been completed: further calls not to exceed 10s. per share, at intervals of not less than three months. About 1700 shares are already agreed to be taken, leaving about 2300, for which applications are invited.

PROVISIONAL DIRECTORS
(See full prospectus).

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OFFICES,—No. 8, AUSTINFRIARS, LONDON.

The object of this company is to purchase and work the Cabezales, Santa Rita, and Costa Rica Mines, adjoining the Pavon Mine, and on the same lode as the Javali and Pavon.

Capt. Holman, formerly under Messrs. J. Taylor and Sons, in Australia, and having had great experience in the gold mines in Brazil, examined this property, and states that with the exception of the Javali itself he has never seen so fine a lode as this in any other district. His report will be found annexed to the full prospectus.

It is estimated that 12 heads of stamps will pulverise 1000 tons of quartz per month, and that 14s. per ton will cover all expenses; but taking only 800 tons, and the costs at 15s. per ton, and allowing a yield of only an average of half an ounce of gold per ton (which is expected to be three-quarters of an ounce per on), the profits would be £600 per month, or £7200 per annum, which alone would pay nearly 50 per cent. on the estimated outlay, including the purchase money. By subsequently and gradually adding to the number of stamps the profits would be proportionably increased.

Full prospectuses, with the reports, can be obtained at the office, 8, Austinfriars, London.

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BRITISH DIVIDEND MINES.

Shares.	Mines.	Paid.	Last Pr.	Business.	Total divs.	Per share.	Last paid.
1500	Alderley Edge, c, Cheshire*	10 0 0	—		10 1 8	0 10 0	July 1868
200	Botallack, t, c, St. Just	91 5 0	200	190 200	488 15 0	5 0 0	May 1866
4000	Brookwood, c, Buckfastleigh	1 11 0	—		0 12 6	0 2 6	Aug. 1868
1000	Bronfloyd, l, Cardigan*	12 0 0	—		10 7 0	0 6 0	Oct. 1868
5094	Bwich Consols, s-l, Cardigan	4 0 0	—		0 5 0	0 5 0	June 1868
6400	Cashwell, l, Cumberland*	2 10 0	—		0 3 0	0 1 6	Aug. 1868
916	Cargoll, s-l, Newlyn	15 5 7	—	20	15 5 0	0 10 0	Oct. 1868
1280	Chanticleer, l,	0 7 8	—		0 1 0	0 0 6	Nov. 1868
2450	Cook's Kitchen, c, Illogan‡	19 14 9	13½	12½ 13½	1 12 0	0 5 0	Oct. 1868
509	Creegbrawse and Penkevil, t	—	—		2 5 0	1 5 0	April 1868
867	Cwm Erfin, l, Cardiganshire*	7 10 0	—		29 3 0	0 15 0	Oct. 1868
128	Cwmystwith, l, Cardiganshire	60 0 0	—		333 10 0	2 0 0	Aug. 1868
280	Derwent Mines, s-l, Durham	300 0 0	—		177 0 0	2 10 0	July 1868
1024	Devon Gt. Consols, c, Tavistock†	1 0 0	320	330 340	1120 0 0	5 0 0	Nov. 1868
656	Ding Dong, t, Gulval‡	49 14 6	—		0 10 0	0 10 0	Sept. 1867
358	Dolcoath, c, t, Camborne	128 17 6	400	390 400	864 10 0	7 0 0	Dec. 1868
6144	East Caradon, c, St. Cleer†	2 14 6	7⅞	6¼ 6¾	14 11 6	0 2 0	July 1867
300	East Darren, l, Cardiganshire	32 0 0	—		162 10 0	2 0 0	April 1868
128	East Pool, t, c, Pool, Illogan	24 5 0	—		447 10 0	5 0 0	Nov. 1868
1906	East Wheal Lovell, t, Wendron	8 9 0	9	8¾ 9¼	4 1 6	0 10 0	May 1868
2800	Foxdale, l, Isle of Man*	25 0 0	—		72 0 0	0 10 0	Sept. 1868
5000	Frank Mills, l, Christow	3 18 6	3¼	3⅛ 3⅜	3 5 6	0 5 0	Feb. 1866
3950	Gawton, c, Tavistock	3 10 6	1⅝		0 3 0	0 3 0	Jan. 1868
15000	Great Laxey, l, Isle of Man*	4 0 0	21	19 21	9 15 0	0 10 0	Dec. 1868
5908	Great Wheal Vor, t, c, Helston†	40 0 0	12½	11 12	13 16 0	0 5 0	Dec. 1868
1024	Herodsfoot, l, near Liskeard†	8 10 0	45	43 45	48 0 0	1 10 0	Oct. 1868
165	Levant, c, t, St. Just	10 8 1	—		1095 0 0	2 0 0	July 1868
400	Lisburne, l, Cardiganshire	18 15 0	—		510 10 0	1 10 0	Nov. 1868
3000	Maes-y-Safn, l, Flint*	20 0 0	—		4 0 0	0 5 0	Oct. 1868
9000	Marke Valley, c, Caradon	4 10 6	9¼	8¾ 9	4 14 0	0 5 0	Oct. 1868
3000	Minera Boundary, l, Wrexham*	1 0 0	—		0 13 0	0 3 0	Mar. 1866
1800	Minera Mining Co. l, Wrexham*	25 0 0	—		243 13 6	4 0 0	Nov. 1868
20000	Mining Co. of Ireland, c, l, cl	7 0 0	11⅝	12⅜ 12¾	—	9 p.ct.	July 1868
40000	Mwyndy Iron Ore*†	3 5 0	—		0 8 6	0 2 0	Mar. 1868
200	Parys Mines, c, Anglesey*	50 0 0	—		162 10 0	2 10 0	Aug. 1868
12800	Prince of Wales, t, Calstock	0 12 6	30s.	24s. 26s.	0 8 6	0 1 0	Nov. 1868
1120	Providence, t, Uny Lelant†	10 6 7	35	33 35	85 12 6	0 10 0	Sept. 1868
512	South Caradon, c, St. Cleer†	1 5 0	—		602 10 0	5 0 0	Nov. 1868
6000	South Darren, l, Cardigan*	3 6 6	—		0 13 0	0 1 6	Aug. 1868
937	South Wh. Crofty, c, Illogan	24 10 10	14	13 14	1 0 0	0 10 0	Sept. 1868
496	So. Wh. Frances, c, Illog.‡	18 18 9	15	13 14	374 13 6	1 0 0	Mar. 1868
508	Summer Hill, l, Mold	3 18 6	—		2 5 6	0 5 0	Feb. 1868
6000	Tincroft, c, t, Pool, Illogan†	9 0 0	16½	16½ 17½	20 1 0	0 5 0	Nov. 1868
2000	Trumpet Cons., t, Helston	11 10 0	—		13 10 0	0 10 0	Oct. 1868
3000	W. Chiverton, l, Perranzabuloe†	10 0 0	61	59 61	31 7 6	2 0 0	Nov. 1868
5000	West Godolphin, t, c, Breage	0 1 0	—		0 2 0	0 2 0	Dec. 1867
400	W. Wheal Seton, c, Camborne	47 0 0	190	185 190	616 0 0	6 0 0	Dec. 1868
512	Wheal Basset, c, Illogan†	5 2 6	65	6	632 10 0	1 0 0	June 1868
1024	Wheal Friendship, c, Tavistock	20 0 0	—		300 10 0	0 10 0	Nov. 1866
512	Wheal Jane, s-l, Kea	10 15 0	—		21 0 0	2 0 0	Nov. 1868
4295	Wheal Kitty, t, St. Agnes	5 4 6	4	3¾ 4	3 11 0	0 2 0	Nov. 1868
1024	Wheal Mary Ann, l, Menheniot†	8 0 0	24	20 21	66 17 6	0 17 6	Dec. 1868
80	Wheal Owles, t, St. Just‡	70 0 0	—		350 13 0	7 10 0	Feb. 1868
396	Wheal Seton, t, c, Camborne	58 10 0	65	65 70	254 15 0	2 0 0	Feb. 1868
3000	Whitewell Lead, Clitheroe*	0 5 0	—		1 0 0	0 10 0	Dec. 1867
17000	Wicklow, c, t† Wicklow	2 10 0	—	12⅛ 12¼	49 1 0	0 5 0	Oct. 1868

FOREIGN DIVIDEND MINES.

25000	Alamillos, l, Spain*†	2 0 0	1¾	1¼ 1¾	0 4 6	0 2 0	Sept. 1868
20000	Australian, c, South Australia†‡	7 7 6	—		0 1 6	0 0 6	Aug. 1868
15000	Cape Copper Mining*†	7 0 0	11⅜	13	3 17 6	0 15 0	Nov. 1868
30000	Central American Associatfon*†	1 10 0	—		—	—	
76162	Don Pedro North del Rey*†‡	0 14 0	4	3⅞ 4⅛	1 0 3	0 3 6	Nov. 1868
70000	English and Australian, c‡	2 10 0	—	⅛ ¾	—	0 1 0	Feb. 1868
25000	Fortuna, l, Spain*†	2 0 0	2	1½ 2	1 11 10	0 2 6	Sept. 1868
20000	Gen. Mining Assoc., Nova Scotia†	20 0 0	—	⅞ 1	23 10 0	0 15 0	June 1867
10000	Gonnesa, l,*	5 0 0	—		10 per cent.		Aug. 1868
68000	Kapunda Mining Co., Austra†‡	1 0 0	—		0 1 10	0 0 6	Nov. 1868
15000	Linares, t, Spain*†	3 0 0	3	2½ 3	11 15 0	0 3 4	Sept. 1868
50000	Panuelillo, c, Chili*†	3 0 0	1	½ 1	10 per cent.		Yearly.
6000	Peel River Land and Mineral*†	100 0 0	—		—	—	
10000	Pontgibaud, s-l, France†	20 0 0	—	10 12	5 6 2	0 19 7	Dec. 1868
100000	Port Phillip, g, Clunes†	1 0 0	2	1¾ 2	1 3 0	0 1 0	Oct. 1868
120000	Scottish Australian Min. Co.†	1 0 0	1⅛	⅞ 1⅛	10 per cent.		Nov. 1868
11000	St. John del Rey, Brazil*†	15 0 0	15½	14½ 15½	81 10 0	4 5 0	Dec. 1867
	Swedish Sulphur Ore*	2 10 0	—		7½ per cent.		Dec. 1868
13500	Vancouver Coal Mining*†‡	6 0 0	8½	8 9	2 2 6	—	Nov. 1868
50000	Victoria (London) [25000 £1 pd., 25000 12s. 6d. pd.]				0 9 7	0 0 7	July 1868
40000	West Canada Mining Co.*	1 0 0	—		0 19 6	0 2 6	May 1866

NON-DIVIDEND FOREIGN MINES.

Shares.	Mines.	Paid.	Last Pr.	Bus. done.	Last Call.
50000	Anglo-Argentine, s, Argentine Republic*	1 0 0	—		
00000	Anglo-Brazilian, g*†	0 10 0	—	9s. 11s.	Nov. 1866
12500	Anglo-Italian, g*†	0 10 0	—		Jan. 1868
20000	Australian United, g	1 0 0	—		Mar. 1868
2464	Burra Burra, c, South Australia‡	5 0 0	—		
20000	Capula, s, Mexico*†	1 17 6	—	1 1¼	May 1868
30000	Chontales, g, s, Nicaragua*†	5 0 0	2¾	2⅜ 2⅝	Mar. 1868
12000	Cobre Copper Company, c, Cuba†*	45 10 0	—		Jan. 1868
10000	Copiapo Mining Company, Chili†	16 10 0	—		
10000	Copiapo Smelting, Chili*	10 0 0	—		April 1866
300	Copper Miners' Co. of South Australia* [150 £100 pd., 150 £70 pd.]				Nov. 1866
15000	El Chico Silver Mining and Reduction Company*	5 0 0	—		Nov. 1866
40000	Fortune Copper Mining Co. of Western Australia	2 0 0	—		Fully pd.
50000	Frontino and Bolivia, g, New Granada*†	1 17 6	½	7s. 10s.	May 1868
150000	General Brazilian*	0 2 0	¼	7s. 9s.	
80000	Great Northern, c, South Australia†	1 11 6	—		Sept. 1862
50000	Javali, g, Nicaragua	1 0 0	—		June 1868
7927	Lusitanian (Portugal)†‡	2 15 0	—		Dec. 1866
83640	Mariquita, g, s, New Granada	1 0 0	—		Feb. 1868
12500	Nerbudda Coal and Iron, India*†	6 0 0	—		Dec. 1867
51000	New Quebrada, c, Venezuela*†	4 4 0	—		
15000	Otea, c, New Zealand*	2 0 0	—		Fully pd.
80000	Pestarena United, g, Italy*†	2 17 6	1¼	1⅛ 1⅜	
10178	Rhenish Consolidated, l [6000 £5 pd., 4178 £2 10s. pd.]	—	—		May 1866
100000	Rossa Grande, g, Brazil*†	0 14 0	½		June 1867
15000	San Pedro del Monte, s, Mexico*	4 0 0	—		Sept. 1866
10000	San Roque, l, Spain	5 0 0	—		Fully pd.
10000	Sao Vicente, Brazil*†	1 0 0	3		Oct. 1868
100000	Taquaril, g, Brazil*	0 7 6	⅜	8s. 10s.	Oct. 1868
43174	United Mexican, s, Mexico†*	28 5 2	2¼	1¾ 2¼	May 1868
30000	Val Antigoria, g, Italy*	1 2 6	—	⅞ 1⅛	
6000	Val Sassam, s, c, l, Italy*†	8 0 0	—		Aug. 1868
45000	Victor Emanuel, c, Italy*	1 0 0	—		Fully pd.
20000	Washoe, g, Nevada†	5 0 0	—		Fully pd.
80000	Worthing, c, South Australia*†	1 0 0	⅜	¼ ⅜	Fully pd.
75000	Yorke Peninsula, South Australia	1 0 0	¼	4s. 6s.	Fully pd.
45000	Yudanamutana, c, South Australia*‡	3 0 0	2¼	1⅞ 2⅛	Fully pd.

NON-DIVIDEND MINES.

Shares.	Mines.	Paid.	Last Pr.	Bus. done.	Last Call.
12000	Brynpostig, Montgomery, l*	1 0 0	—		
1000	Carn Brea, c, t, Illogan‡	30 0 0	22½	22 24	June 1868
3000	Chiverton, l, Perranzabuloe	11 0 0	6¼	6 6¼	Nov. 1868
3000	Chiverton Moor, l, Perranzabuloe	6 13 6	6¼	5½ 6	Nov. 1868
2880	Clifford Amalgamated, c, Gwennap‡	40 17 6	—		Oct. 1868
12800	Drake Walls, t, Calstock‡	2 5 0	⅜	18s. 20s.	Dec. 1866
512	East Basset, c, Redruth†‡	37 0 0	9	8 9	Nov. 1868
6000	East Carn Brea, c, Redruth‡	4 3 6	⅛	7s. 8s.	Dec. 1868
6000	East Grenville, c, Camborne	4 2 6	3½	3⅜ 3¼	Nov. 1868
4000	East Wheal Russell, c, Tavistock†	13 13 6	—		Oct. 1868
6144	Gonamena, c, St. Cleer	7 12 9	—		Dec. 1868
5000	Great North Downs, c, Redruth	6 13 0	2¼	1¾ 2	Feb. 1867
4800	Great Retallack, s-l, b, Perranzabuloe	2 19 6	2½	2½ 3	Oct. 1868
5143	Great South Tolgus, c, Redruth	1 10 6	—		Dec. 1868
1798	Great Wheal Fortune, t, Breage	31 7 4	—		Mar. 1868
6000	Hingston Down, c, Calstock†	5 12 0	—		Dec. 1868
400	New Wheal Seton, c, Camborne	60 10 0	—		April 1868
3457	North Downs, c, Redruth	5 8 10	—		Jan. 1868
695	North Roskear, c, Camborne	61 9 0	11	9 10	Nov. 1868
5936	North Treskerby, c, St. Agnes	1 12 4	½	11s. 14s.	Dec. 1860
3000	North Wheal Chiverton, l, Perranzabuloe	4 10 0	—		Nov. 1868
1024	Rose and Chiverton United, l, Newlyn	6 0 0	—		Aug. 1868
6138	South Condurrow, t, c, Camborne	4 8 6	⅜	¾ ⅞	Oct. 1868
1000	South Merllyn, l, Flint	1 0 0	—		
940	St. Ives Consols, t, St. Ives‡	10 15 0	—	9 10	Nov. 1867
920	Stray Park, c, t, Camborne†‡	45 5 8	5½	5 5½	April 1868
548	Trelyon Consols, t, St. Ives	16 0 0	—		Dec. 1866
1000	West Basset, c, Illogan†‡	2 0 0	—		May 1868
1024	West Caradon, c, St. Cleer†‡	25 0 0	4	3 4	Nov. 1868
12800	West Drake Walls, c, Calstock	0 6 0	⅜	6s. 7s.	Nov. 1868
2582	West Great Work, t, Breage	5 11 0	2¾	2¼ 2½	June 1866
6000	West St. Ives, t, c, St. Ives	0 3 6	—		Oct. 1868
512	West Wheal Frances, t, Illogan	106 15 0	42½	39 41	
5000	West Wheal Kitty, t, St. Agnes	3 4 0	—		Nov. 1868
4000	Wheal Agar, c, Illogan	7 13 0	—		Oct. 1868
512	Wheal Buller, c, Redruth†‡	28 5 0	—		Nov. 1868
811	Wheal Emily Henrietta, c, Illogan	20 0 0	21	19 21	Jan. 1868
5724	Wheal Grenville, c, Camborne†	10 8 0	1⅝	1⅛ 1⅜	Sept. 1868
1040	Wheal Trelawny, s-l, Liskeard†	9 7 0	7½	6 7	Dec. 1867
5000	Wheal Uny, t, c, Redruth	10 14 6	4	3⅞ 4⅛	Oct. 1868

NON-DIVIDEND MINES.

Shares.	Mines.	Paid.	Last Pr.	Bus. done.	Last Call.
1000	Ballacorkish, I. of Man, l, c*	4 0 0	—		
4000	BedfordConsols, c, Tavistock	3 0 6	—		
4000	Bedford United, c, Tavist.*	2 17 8	2	1¾ 2	
1248	Boscaswell, t, c, St. Just	7 6 0	—		
5000	Bottle Hill, t, Plympton	1 14 6	—		
5000	Bryn Gwiog, l, Flint	0 18 0	—		
1200	Bryn Gwyn, l, Mold*	9 0 0	—		
7500	Brynystwith, l*	0 10 0	—		
1000	Budnick Consols, c	2 5 0	—		
6000	Bwadrain Cons., s-l, Cardig.	3 2 0	—		
30000	Caldbeck Fells, l, Cumberld.*	1 15 0	1	1⅛	
1000	Camborne Consols, c	11 10 0	—		
11000	Cape Cornwall, t, c* [8000 £2 10s. pd., 3000 25s. pd.]				
5000	Capel Banhaglog, l, Mont.*	1 10 0	—		
914	Caradon Consols, c, St. Cleer	32 13 6	7		6 7
1000	Cardynham China-clay*	3 0 0	—		
6000	Carn Camborne, c, Cambrn.	2 9 0	⅜		
2000	Carnmarth Granite Co.*	—	—		
20000	Carysfort [3200 £2½ pd., 16800 £1 ½ pd.]				
2500	Central Minera, l, Wrexham*	3 1 6	—		
16000	Central Snailbeach l*	1 0 0	—		
3000	Chiverton Valley, l, Perranz.	2 0 0	3¼	3 3¼	
2048	Colquite & Callington Un., c.	1 3 0	2⅜	2⅜ 2⅝	
256	Condurrow, c, t, Camborne‡	76 10 0	—		
50000	Connorree, c, s-l, Wicklow*	1 0 0	—		
983	Copper Hill, c, Redruth‡	12 10 0	—		
1000	Cornwall Hematite Co.*	5 0 0	—		
1055	Craddock Moor, c, St. Cleer‡	14 0 0	—		
12000	Crelake, c, Tavistock	3 12 0	—		
6000	Cuddra, t, St. Austell	5 10 0	—		
300	Cwm Daren, Cardigan*	—	—	20	20
740	Erglebrook, l, Talybont*	19 15 0	—		
1000	East Basset and Grylls, t	3 5 0	—		
4000	East Chiverton, l, Perranz.	3 4 9	—		
4000	E. Gunnislake & S. Bed. c	11 1 6	—		
6000	East Laxey, l, Isle of Man	3 0 0	—		
4096	E. New Wh. Lovell, t, Wend.	0 5 0	⅜	¼ ⅜	
5000	E. Rosewarne, c, t, Gwinear	2 19 0	—		
6000	East Snacfell, l, I. of Man*	3 0 0	—		
5610	East Seton, c, Camborne	0 16 6	—		
1190	E. Wh. Agar, c, St. Cleer	12 17 0	—		
6000	East Wheal Reeth, Lelant	—	—	1¼	1 1¼
5000	E. Wh. Rose Con., l, Per.*	2 10 0	—		
6000	Ebury Lead Min. Co., Flint*	1 15 0	—		
1026	Garden, c, Morvah	6 15 3	—		
6000	Gen. Min. Co. for Ireland, c	5 10 0	—		
40000	Glasgow Caradon, c* [30,000 £1 p., 10,000 15s. p.]				
10000	Glan Alun, l, Mold*	0 12 0	⅜	12s. 14s.	
5700	Goginan, Cardigan, l	12 10 0	—		
6000	Gothic, s-l, Cardigan*	2 10 0	—		
486	Grambler & St. Aubyn, c‡	74 0 0	—		
10000	Great Cwmsymlog, s-l*	1 15 0	—		
4096	Great Caradon, c, St. Ive	4 3 0	—		
12500	Gt. No. Laxey (Isle of Man)*	1 0 0	⅜	¼ ⅜	
6000	Great N. Tolgus, c, Illogan	1 0 0	—		
15000	Great Rhosesmor, l	5 0 0	—		
6000	Gt. S. Chiverton, s-l, Perranz	1 18 6	—		
6000	Great Western, t	2 0 0	2½	2¼ 2½	
3313	Gt. Wh. Baddern, t, Devoran	7 17 6	—		
119	Great Work, t, Germoe	100 0 0	—		
10240	Gunnislake (Clitters'), t, c.	4 19 0	—		
6068	Gwydyr Park, l, Llanrwst	1 11 0	—		
6400	Harwood, l, Durham*	0 7 6	—		
1019	Leeds and St. Aubyn, t, c	19 13 4	—		
1000	Llywernog, l, Cardiganshire	12 10 0	7¼		
5120	Lovell Consols, Wendron, t.	0 6 0	—		
6000	Maudlin, c, Lostwithiel	4 7 0	—		
6000	Mid-Wales, t,*	2 10 0	—		
1000	Montgomeryshire, l, b*	3 0 0	—		
640	Mount Pleasant, l, Mold	4 0 0	—		
1024	Nangiles, t, c, Kea	32 10 0	—		
1500	New Chiverton, l, Perranz	0 17 0	—		
6000	New Clifford, c, Gwennap*	3 0 0	3½	3 3¼	
6400	N. Crow Hill, l, St. Stephen	3 6 6	—		
6514	New E. Russell, c, Tavistock	0 12 6	—		
20000	New Gt. Cons., c, Tavistock*	1 0 0	—		
6400	New Pembroke, St. Blaz, t, c	1 12 0	—		
3680	New Treleigh, c, Redruth	—	—		
6000	New Westminster, l	6 0 0	—		
4096	New Wh. Lovell, t, Wendron	1 19 6	1¾	34s. 36s.	
2000	N. Wh. Towan, c, t, Wendron	1 10 0	—		
5000	No. Dolcoath, c, Camborne	4 3 0	—		
1361	No. Grambler, c, Redruth	9 3 9	—		
6000	North Jane, t, s-l, Kenwyn	3 4 6	—		
2000	North Levant, t, c, St. Just	10 12 0	11	10½ 11	
4000	No. Phœnix, c, Linkinhorne	4 11 0	—		
3240	North Pool, c, Illogan	6 3 6	—		
1024	No. Retallack, c, Perrazabuloe	2 0 0	—		
6000	North Wheal Basset, c, t	5 0 0	—		
5610	N. Wh. Crofty, c, Illogan	3 11 3	1½	1¼ 1⅜	
12288	Okel Tor, c, Calstock	2 7 4	—		
8000	Old Gunnislake, c, Calstock	3 9 6	—		
6400	Par